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Technical Procedures in the Diagnosis and Treatment of Syphilis*

LESTER HOLLANDER, M.D.,
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THE SUBJECT of syphilis as it affects the oral mucous membrane was discussed in this magazine¹ in 1934; illustrations of the different stages were shown to impress on the dental surgeon the relative frequency of this disease.

During the last year, principally through the efforts of Surgeon General Thomas Parran, in a blare of publicity the subject of syphilis is being presented to the laity in an attempt to emphasize its infectious nature and to control it not only in a medical but also in a sociologic sense. As a result of publicity in newspapers, periodicals and radio, people in general are becoming acquainted with the terms of technical nature. It is necessary, then, that those who are practicing any of the healing arts should review some of the technical details, so as to discuss them intelligently with patients.

Diagnosis

There are two important laboratory procedures that aid immeasurably

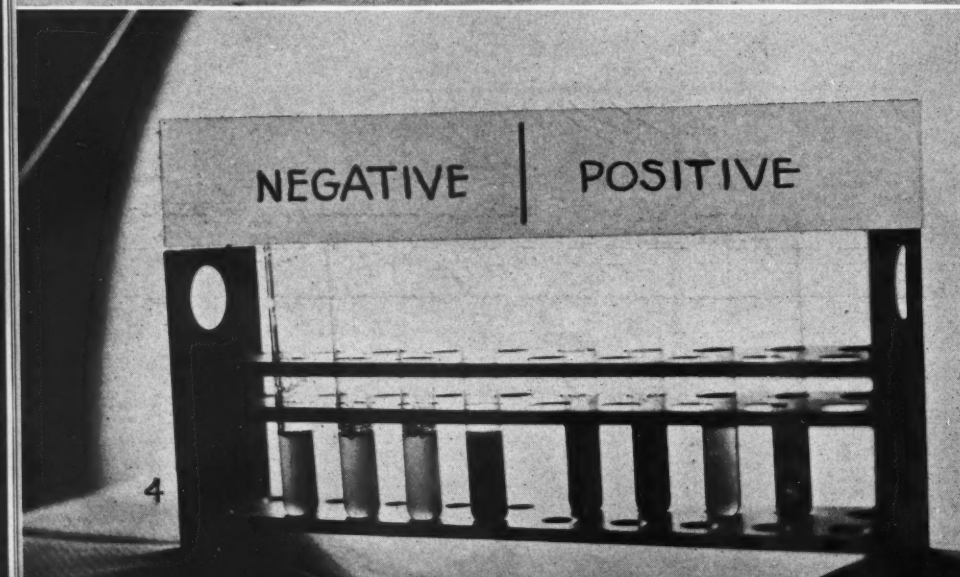
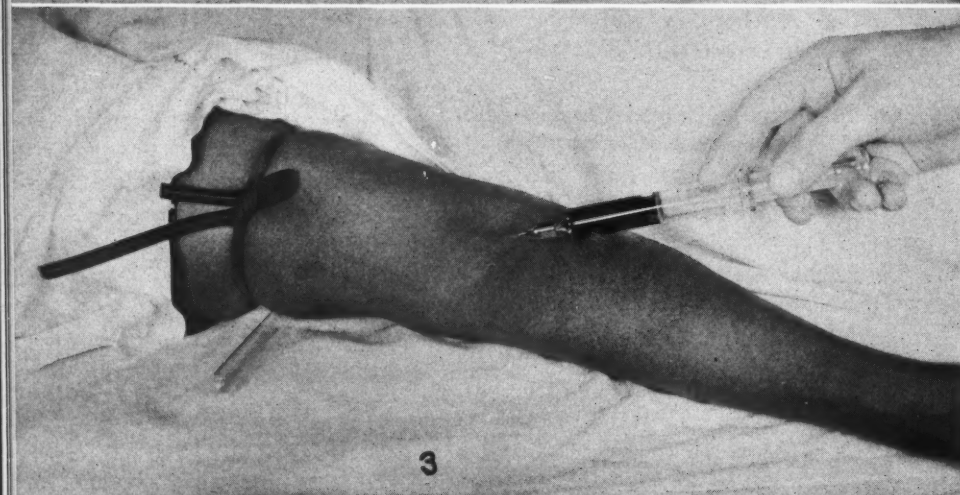
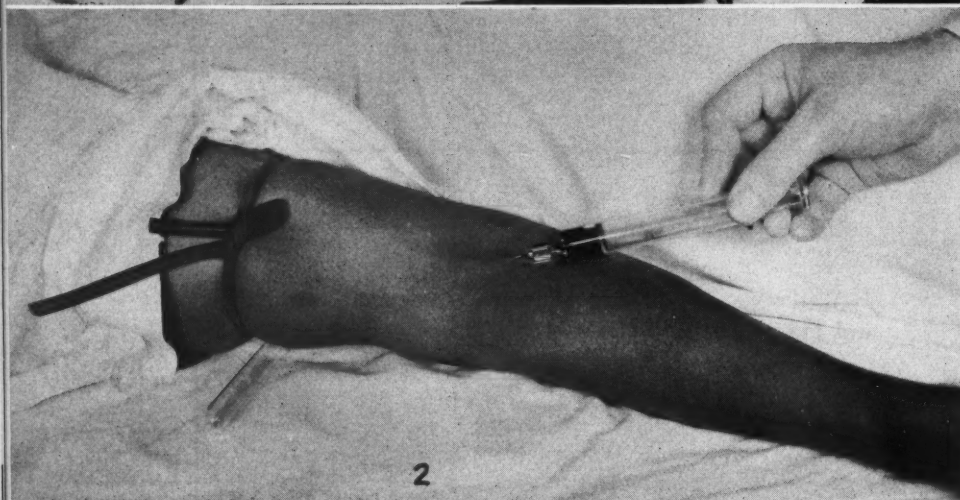
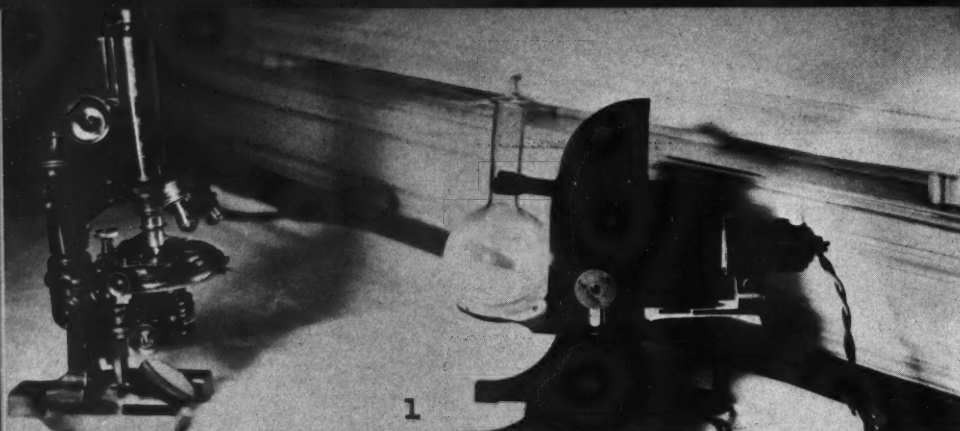
*From the Pittsburgh Skin and Cancer Foundation.

¹Hollander, Lester, and Goldman, B. A.: Syphilis of the Oral Mucosa, DENTAL DIGEST, 40:90; 135; 174 (March, April, May) 1934.

Fig. 1—Microscope with dark-field illumination.

Figs. 2 and 3—Puncture of vein to obtain blood for testing.

Fig. 4—Wassermann test, showing negative and positive reactions in tubes.



rably in the diagnosis of syphilis. In the primary stage, during the presence of a chancre, of first importance is the dark field method of visualization of the causative organism, the *Treponema pallidum* or the so-called *Spirochaeta pallida*. The special apparatus is shown in Fig. 1. The specimen for examination is obtained by manually expressing the serous exudate from the chancre. This, of course, is done with the protection of a rubber glove.

In the secondary and tertiary stages the so-called blood tests are the sheet anchor of diagnosis. There are a number of these. The original one is the so-called Wassermann test, but it has been found that this is not sensitive enough; therefore, other tests, the precipitation and the flocculation tests, have been developed. They are called by the respective names of their discoverers, the common ones being the Kahn and the Hinton tests.

The blood is obtained by venipuncture in the antecubital fossa. It is then permitted to coagulate and the serum is subjected to these various procedures. It has been my contention for some time that for a proper serologic survey, all these tests must be carried out. I have been able to show in extensive studies² that otherwise undetected cases can be found if such a procedure is carried out (Figs. 2 and 3).

This blood test can also be used to determine the efficacy of treatment. As the intensity of the reaction is reported as 1 plus, 2 plus, 3 plus, or 4 plus in its progressive degrees of severity, a reduction in the intensity, or a complete negation in the test, will inform us about the effectiveness of the treatment.

In later stages of syphilis, the cerebrospinal fluid is also subjected to examination and tests. The examination involves the counting of the number of cells that occur per cubic centimeter, the amount of globulin that can be found; the Wassermann test is also performed, the behavior of the cerebrospinal fluid being the same as that of the blood serum. A rise in the lymphocytes from 2 or 3 per field to 20 or 200 per field is also of diagnostic value. The cerebrospinal fluid is

²Hollander, Lester; Schlesinger, C. R., and Schmitt, C. L.: The Hinton Test for Syphilis, J. Lab. & Clin. Med. 22:97 (October) 1936.

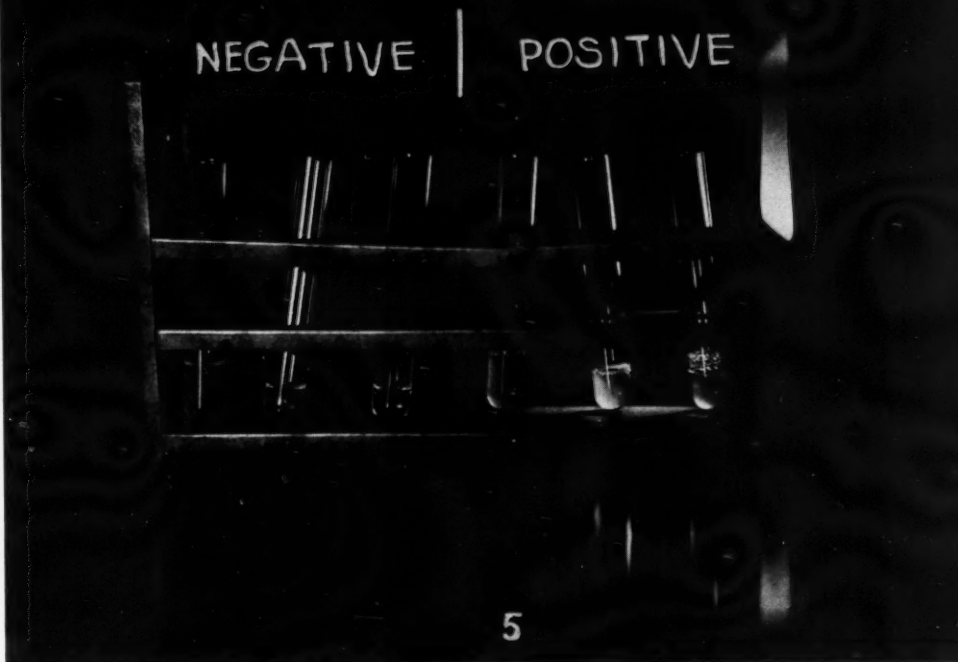


Fig. 5—Kahn test, showing negative and positive tubes.

Fig. 6—Hinton test, showing negative and positive tubes.

obtained by either a lumbar puncture or by a cistern puncture.

Treatment

Arsenic, mercury, bismuth, and artificially produced heat are the weapons used in the treatment of a patient suffering from syphilis. Arsenic or organic arsenical compounds, introduced by Paul Ehrlich before the World War, are used in the form of arsphenamine or neo-arsphenamine, salvarsan or neosalvarsan, 606 or 914, each being a synonym of the other.

Arsphenamine and neo-arsphenamine are administered intravenously. Recently a strong, potent drug under the name of mapharsen has been added to this group of so-called arsenicals. It is also administered intravenously.

Mercury is used intramuscularly, by mouth, through inunction, and by fumigation. Today its greatest value apparently is as a prophylactic in the form of 33 per cent calomel ointment which is used immediately after exposure and which was efficient in the Expeditionary Forces during the World War; also in 50 per cent mercurial ointment as an inunction in congenital syphilitic babies.

Bismuth, in the last fifteen years,



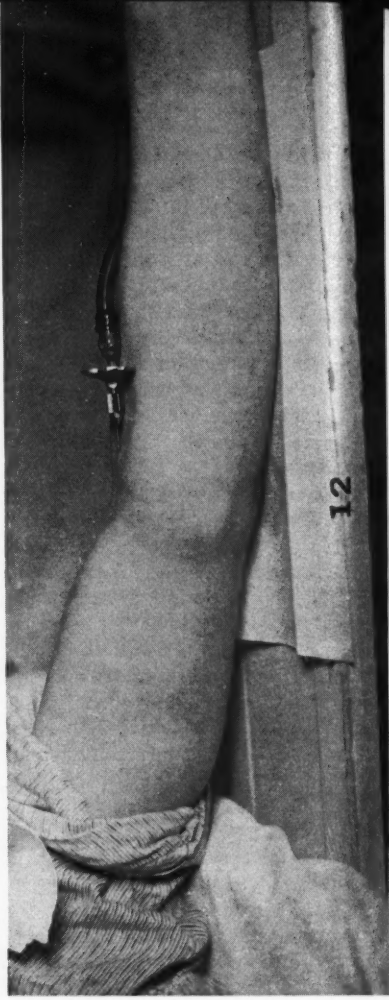
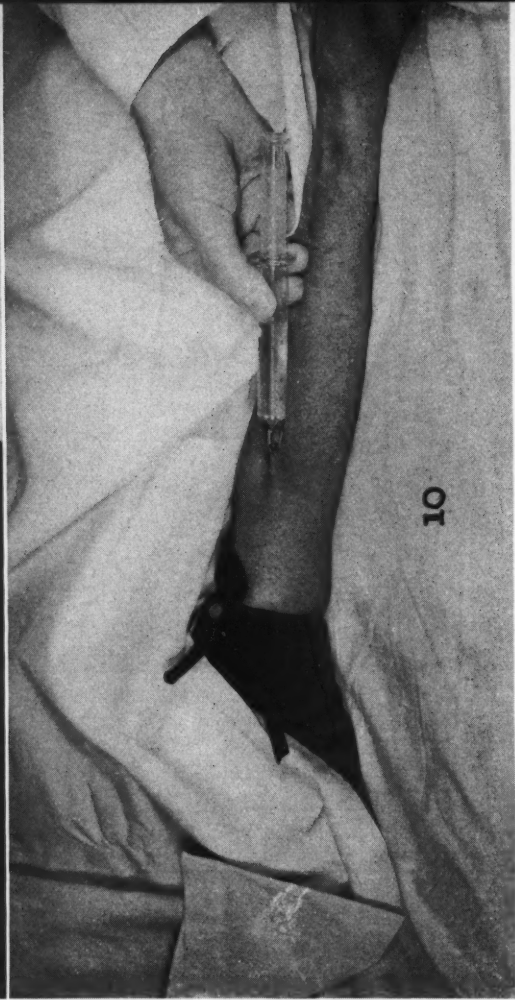
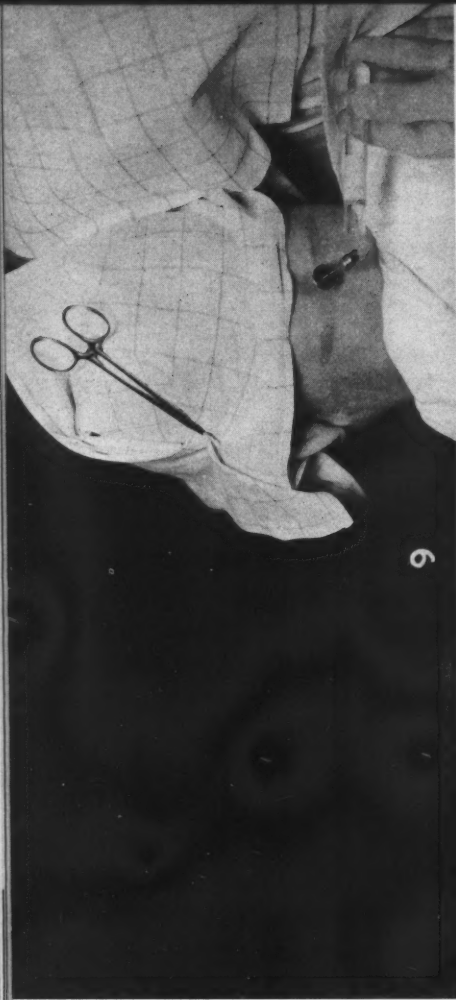
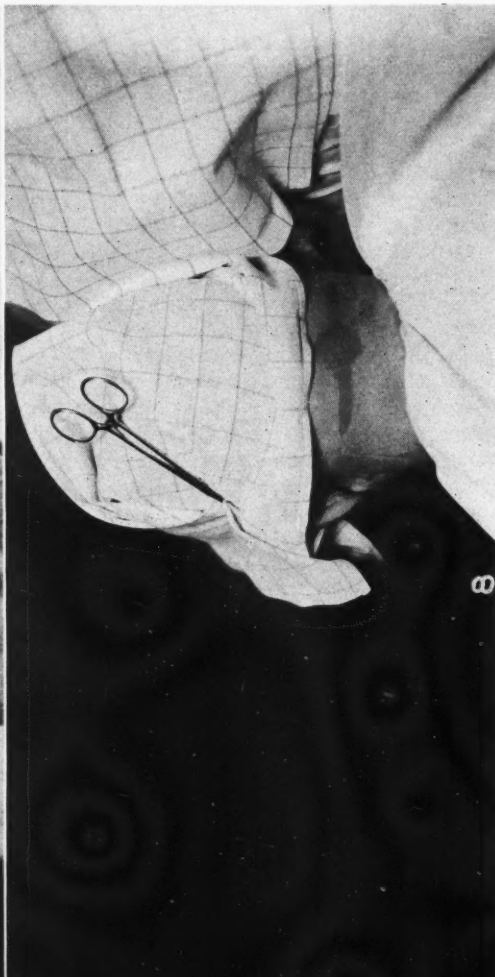


Fig. 7—Local anesthesia for spinal test.

Fig. 10—Spinal anesthesia for abdominal examination.

has greatly replaced mercury as the drug of choice for intramuscular injections. Because the arsenicals are eliminated so rapidly, it is essential that the syphilitic patient be given some spirocheticidal remedy that is slower in its elimination from the body. Bismuth, in oil suspension or in salts that are soluble in oil, in watery suspension or in salts soluble in water, is used with good results.

Principally through the monumental work of Von Jaureg, the elevation

of body temperature has been introduced in the treatment of syphilis, with results that are at times unbelievably good. This elevation of temperature may be obtained (1) by inoculation with the *Plasmodium malariae*; (2) by the use of foreign body protein intravenously in the form of paratyphoid injections; (3) by the use of induction coils, short wave machines, or diathermy apparatus; (4) by steam baths, or even by simple blanket packs and hot packs.

The temperature of the patient is elevated to 104° F. or 104.5° F. and kept there for variable lengths of time. The best and most efficient treatment includes the combination of most of these therapeutic procedures.

Early and concise diagnosis, and efficient and conscientious treatment are essential in the fight against syphilis.

631 Jenkins Building.

Examination for Appointment in the Dental Corps, Regular Army

AN EXAMINATION for selection of candidates for appointment in the Dental Corps, Regular Army, will be held during the period August 15-20, 1938, at the Walter Reed General Hospital, Washington, D. C.; Fitzsimons General Hospital, Denver, Colorado; Letterman General Hospital, San Francisco, California, and Fort Sam Houston, Texas.

The general eligibility requirements for appointment are that the candidate be a citizen of the United States between the ages of 23 and 32 years, be a graduate of an acceptable dental school, and be physically fit. Candidates must also have been engaged in the practice of their profession for at least 2 years subsequent to graduation.

Application for authority to take the preliminary examination must be made on the form provided for the purpose which may be obtained at any military post or station, or from The Adjutant General of the Army, Washington, D. C.

A circular of information concerning the Dental Corps, scope of the examination and method of making application, may be obtained from The Surgeon General, U. S. Army, Washington, D. C.

Applications will be received for consideration until August 1, 1938.

Control of Dental Caries

JAMES MARK PRIME, D.D.Sc., Omaha

THE SIMPLE CONTROL treatment for dental caries to be described here may be conveniently divided into three parts:

1. By the use of ammoniacal silver nitrate, incipient and invisible dental caries is discovered before it can be detected by sight or touch: it is chemically disclosed before it is clinically demonstrable.

2. This treatment arrests the carious process by destroying acidogenic bacteria, neutralizing the acid of caries, and producing a dense metallic-like precipitate of silver salts which acts as a barrier to the extension of the disease process.

3. This treatment affords a method of preserving the vitality of teeth that have undergone massive destruction by caries.

Problem of Detection

Incipient dental caries, in common with other microbial diseases, cannot be seen by the unaided eye. At its inception such a disease is as invisible as are the bacteria causing it. The microbial disease known as dental caries makes itself known by only one symptom: loss of tooth structure by decalcification. At the onset this decalcification is so slight that it cannot be detected by any of our senses. This symptom progresses insidiously and unseen until it has destroyed sufficient tissue to be detected, and the presence of dental caries is discovered. The presence of some microbial disease may be determined before symptoms develop by finding overgrowths of specific organisms in the tissues or blood stream. This cannot be done in the case of dental caries, because no specific organism is known to cause the disease.

Like other microbial diseases, dental caries progresses with mathematical certainty. It starts lightly and slowly, but as the organisms multiply the attack increases rapidly. The tooth is less resistant than other tissues because it has no blood supply in its enamel in which antibodies may form in defense of the host.

Failure of Prevention

In a large measure, I believe, the method of waiting for the disease to develop a symptom that could be felt or seen explains why we have failed in preventing proximal caries. We wait for the symptom to develop into a "hole" in the tooth; then we treat the symptom by "filling the hole." We should treat the symptom before the senses of sight and touch can detect it. Caries is just as real while it is in the incipient, invisible etching stage as it is when a large cavity is present. True prevention will prevent the cavity.

Disclosure Necessary for Prevention

The carious area is white, exactly the color of the enamel. It cannot be seen if the surface is dried and closely examined with magnifying glasses. Furthermore, it cannot be seen on the enamel of an extracted tooth. Only after a great deal of harm has been done can it be seen on an extracted tooth. How, then, may we hope to see it while the teeth are *in situ* and the

surface is partly hidden by proximal contact?

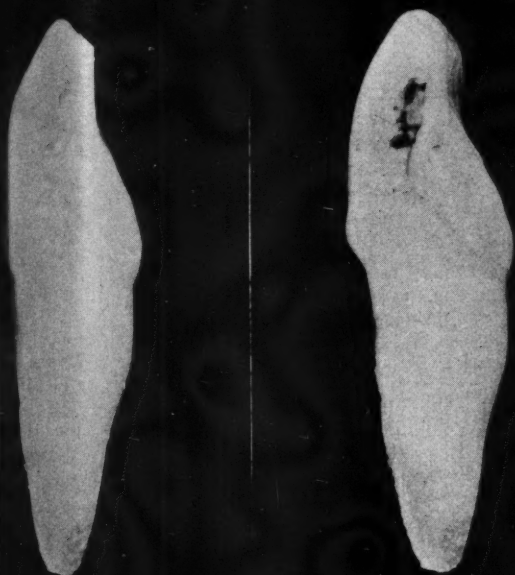
Inasmuch as the pre-cavity stage is not apparent the only hope lies in a method to color these etched areas so as to make them visible in their incipience and before serious harm is done. That proximal caries begins on a smooth enamel surface is well known, but what is not generally recognized is that it is invisible. Definite measures are now known to bring this disease in its first stage within the sense of sight before injury has come to the enamel surface.

Disclosing Procedure

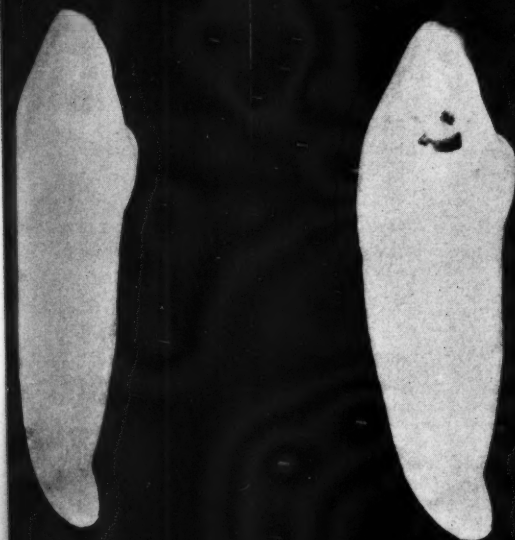
1. Dry the surfaces thoroughly. All tooth tissues in the mouth are super-saturated. They will take no more moisture until they are relieved of moisture by drying; therefore, all surfaces to be treated must be dried. To that end, it is advisable to use the rubber dam on patients 10 years of age and older. The bicuspid and molars are best treated under the dam while restorations are being made. One fourth of the teeth are in-

TECHNIQUE

1. The teeth are isolated under the rubber dam or with gauze napkins. The surfaces must be dry.
2. The proximal surfaces are cleaned of debris with silk floss. Prevent injury of the septal tissue. Prevent hemorrhage.
3. The solution of ammoniacal silver nitrate is applied to the proximal surfaces.
4. A piece of waxed silk floss, about 10 inches long, is looped and dipped into a dappen dish containing the solution of silver nitrate. The ligature is passed through the contact point and the moistened portion of the floss is drawn against the proximating tooth surfaces.
5. After the application of the silver nitrate, another piece of floss is looped and dipped in eugenol, and carried to the proximal areas. The eugenol reduces the silver nitrate to form an alkaline, insoluble precipitate of silver albuminate in the decalcified zones.
6. Any excess solution is absorbed with cotton from the labial and lingual surfaces.
7. The stain on the labial surfaces is removed with triple X silex dissolved in hydrogen dioxide. Rubber polishing cups and discs are used.



1 A



1 C



1 B



1 D

Fig. 1, A, B, C, and D—These extracted teeth were kept in water. They showed no evidence of proximal caries. They were dried; the solution applied and reduced as is done in the mouth. Note how invisible, incipient caries took the stain and was disclosed to view. This is what takes place in the mouth. Even if there were no ar-

resting influence the procedure would be worth while. The arresting and preventive influence, however, has been observed over a period of seven years. Repeated applications are advised, especially in highly susceptible children.

cluded in the dam and they are thoroughly dried.

2. Apply Howe's ammoniacal silver nitrate. The solution will not enter the interstitial spaces simply by flow-

ing it over the surface. It must be "frictioned" in with silk floss as the painter "frictions" his paint into the wood fibers with his brush. After restorations are completed, proximal

surfaces are flooded with the solution and a ligature is passed to rub the solution into the proximal surfaces.

3. Reduce the ammoniacal silver nitrate with eugenol.

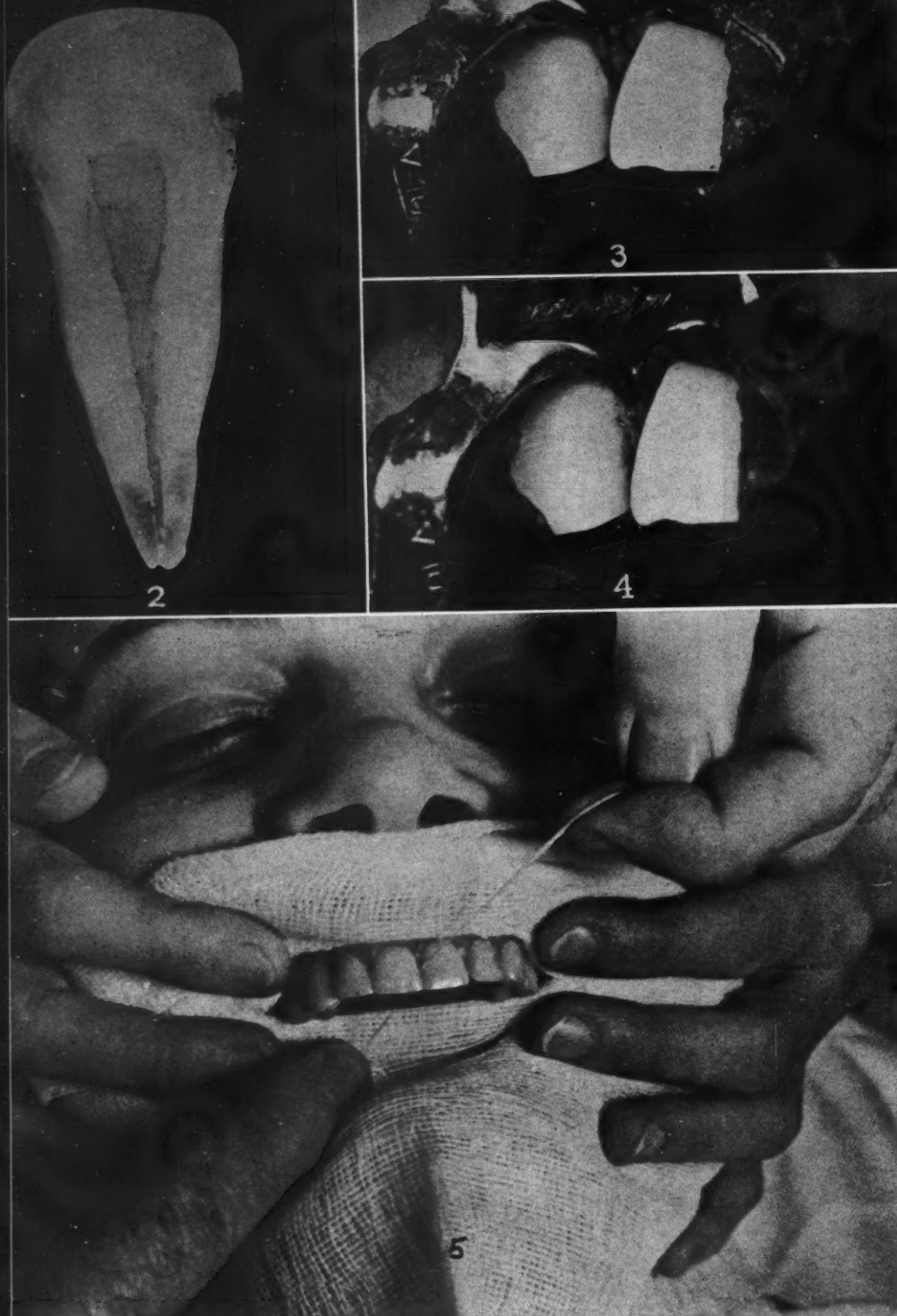


Fig. 2—This central was treated and later sectioned. Note how the solution penetrated the mesial caries and the distal was confined to the surface. The stain appears to have penetrated on both sides. It did penetrate on the mesial but the stain on the distal is all on the surface.

Figs. 3 and 4—Centrals of a young man, aged 18, presumably free from caries on examination. The centrals were separated and the surfaces appeared caries-free. A picture was taken of the proximal surface of the right central. Solution was applied and reduced while the separator was in place. The result is plainly visible in Fig. 4.

Fig. 5—Silk floss is passed through the teeth and the surfaces are freed of débris. Care must be exercised not to run the floss against the septal tissues, for by so doing mucus and sometimes blood will be excreted and will moisten the dried surfaces.

4. Any solution on the sound enamel surfaces may be easily removed with rubber cups and paste made of triple X silex and hydrogen dioxide, supplemented with the sulci disc. Even without polishing the stain will disappear in a few days from sound surfaces.

If etchings of caries are present, they will take the stain. If the carious process has advanced beyond the etching stage the stain will be deeper. If there is caries, there will be stain; if caries is not present, there will be no stain.

Ammonia is volatile and its evaporation begins as soon as the bottle is opened; therefore, it is safer to renew the supply every week or ten days than to keep a large bottle on hand.

Arrest of Caries

When I began coloring tooth surfaces to disclose caries, I had no idea that I was arresting the carious process. I began this treatment more than seven years ago. I have applied the solution to thousands of surfaces and it has arrested the process in all cases in which there remained a surface continuity. If the surface is broken, the solution has a marked inhibitory action, but the staining may be so severe as to make the treatment objectionable.

Results of this treatment are in inverse ratio to the extent of the caries. The less decalcification, the more control; the more decalcification, the less control. The results are ideal when the caries is in the etching stage; in other words, while it is confined to the surface. It is, therefore, primarily, a surface treatment.

When two teeth erupt and form a proximal contact, two potential cavities are present. The sooner their proximal surfaces are treated, the better. This control treatment is admirably adapted to the deciduous teeth inasmuch as their term of usefulness is relatively short. A little staining here is more tolerable for this reason.

Staining is also especially indicated for the anterior permanent teeth, because there is no satisfactory restorative material for these cavities.

Chemical Action in the Arrest of Caries

When the enamel is etched by the acid of caries the mineral salts are

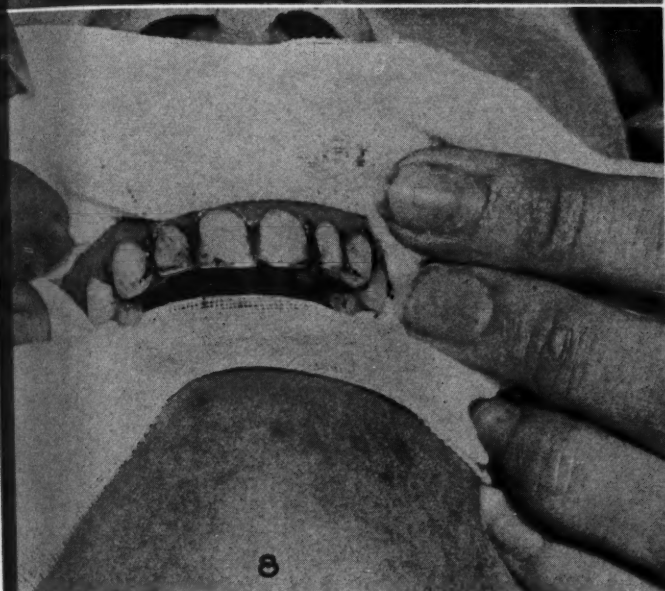
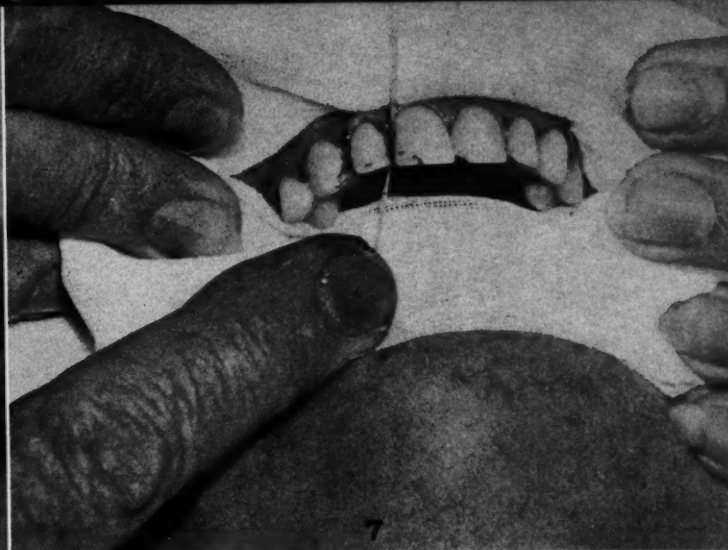


Fig. 6—A piece of waxed silk, about 10 inches long is looped and dipped into a dappen dish containing the solution. It is passed through the contact point and the moistened portion of the silk is drawn against the surfaces and sawed back and forth several times on each surface. The same place on the same piece of silk is again dipped in the solution and repeated at another approximal contact. This treatment can usually be carried back as far as the distal of the second bicuspid with the use of the cotton rolls as shown.

Fig. 7—After the solution has been applied, another piece of floss is looped and dipped into eugenol from a dappen dish and sawed back and forth in the same manner as used in applying the solution.
Fig. 8—Solution applied from first bicuspid to first bicuspid and reduced with eugenol.
Fig. 9—After the solution has been applied and thoroughly frictioned in with the floss a large piece of absorbent cotton is pressed on the lingual and labial surfaces to absorb the excess Howe solution.

dissolved and minute interstitial spaces are created. After they are thoroughly dried, this solution passes into these spaces previously occupied by the mineral salts. When the silver nitrate solution is reduced with eugenol, albuminate of silver results. This black deposit is insoluble in mouth fluids. The acidogenic organisms are fixed. The medium is no longer favorable for their growth. Their acid is neutralized.

Proximal caries is an autoconta-

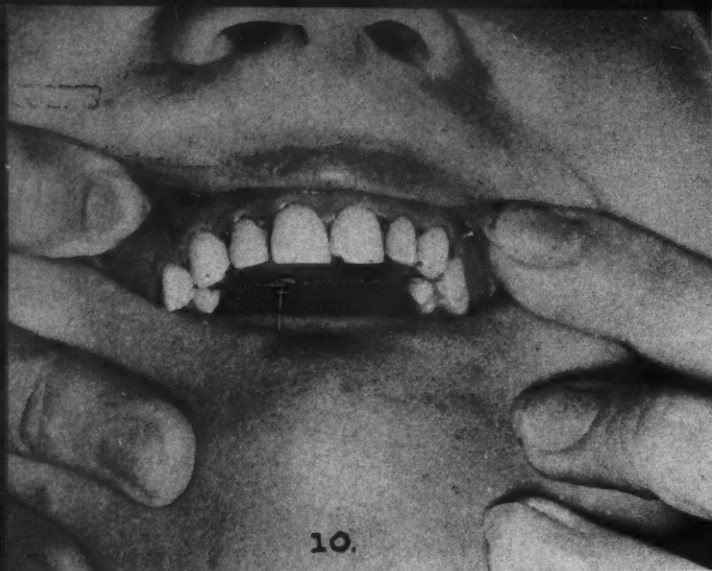
gious disease. A carious proximal surface spreads the contagion to the contacting proximal surface. Contacting diseased surface is conducive to disease. Contacting treated surface is conducive to immunity. Contact in the first instance spreads disease. Contact in the second instance increases immunity.

Objections to Treatment

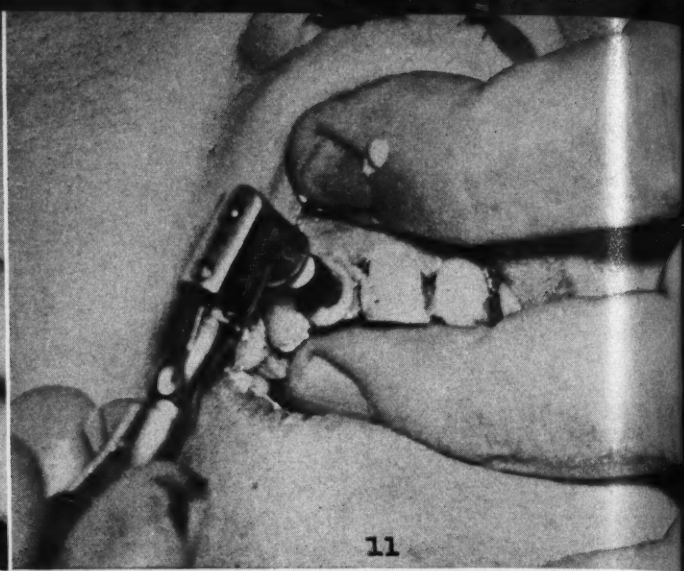
Delay in adopting the treatment suggested here has been the result of

two factors: Fear of objectionable staining and the long period of time required to prove the value of such a treatment. American dentists want quick action. This treatment requires years to prove its efficiency.

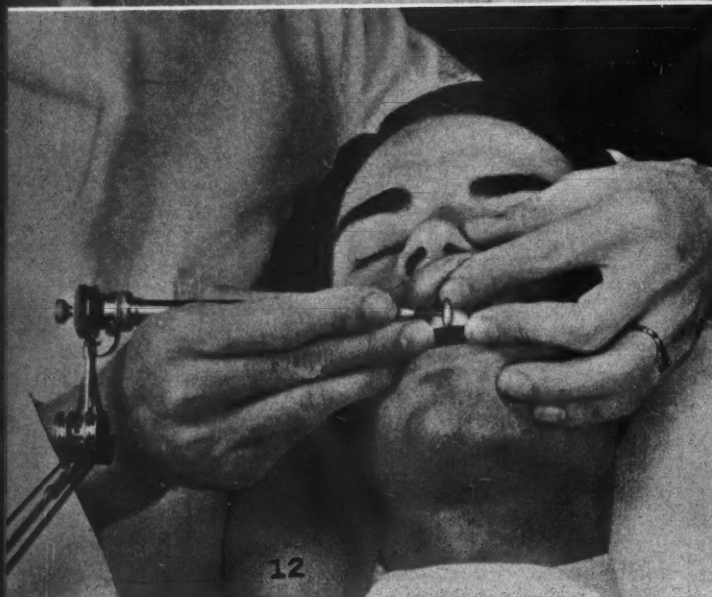
The fear of objectionable stains will disappear when the method is tried. The teeth will be whiter than they were before they were treated, except where the stained areas remain to disclose the carious etchings. Even these stained etchings usually



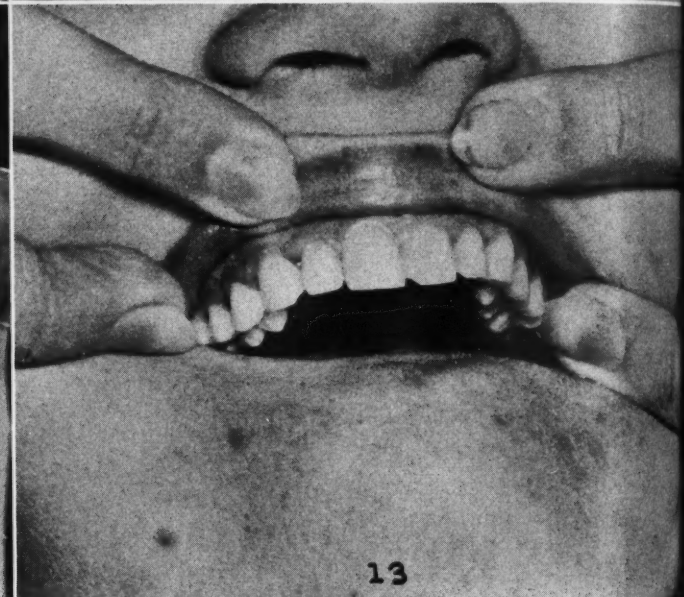
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Fig. 10—When napkins are used instead of the rubber dam, solution gets onto the gum tissue as shown. This stain is on epithelial cells and will disappear in a day or two; the disappearance will be hastened by touching each spot with tincture of iodine.

Fig. 11—Removing stain from labial surfaces. Rubber cup with

a paste made by moistening triple X silix with hydrogen dioxide.

Fig. 12—Rubber cup fails to reach all angles of tooth in removing stain; a sulci disc will be found helpful.

Fig. 13—Two days after treatment. Stain on gum tissue has disappeared.

are not visible from the labial view, for caries begins gingivally and linguallly to the contact point. If there are no etchings, all the stain can be removed by polishing; or without polishing, will disappear in a few days.

Pits and Fissures

It must be remembered that pits and fissures cannot be controlled with this solution. They must be restored as early as possible. Even if this treatment were applied on every child in America, and even if it were entirely

successful in preventing proximal decay there would remain millions of pits and fissures to be restored—a task too big to accomplish even if the entire profession devoted itself to it.

Deep-Seated Caries

Silver nitrate solution, made by dissolving the crystals in water, has been used as a preventive for dental caries for many years. Those dentists who, like myself, formerly used it near the pulp, experienced difficulties. It irritated the pulp and often resulted in

devitalization. We soon learned that it was a dangerous drug to use near a vital pulp and we discontinued its use.

It is now more than twenty years since Percy Howe added ammonia to a solution of silver nitrate for sterilizing root canals. He advised reducing it with a 10 per cent solution of formalin. Formalin was a slow devitalizing agent. It was decided, therefore, that eugenol was a safer reducing agent than formalin in the treatment of vital teeth.

Chemists demonstrated why a plain

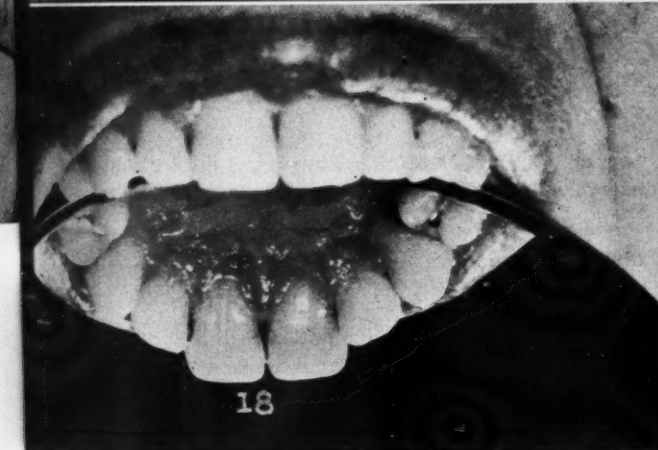
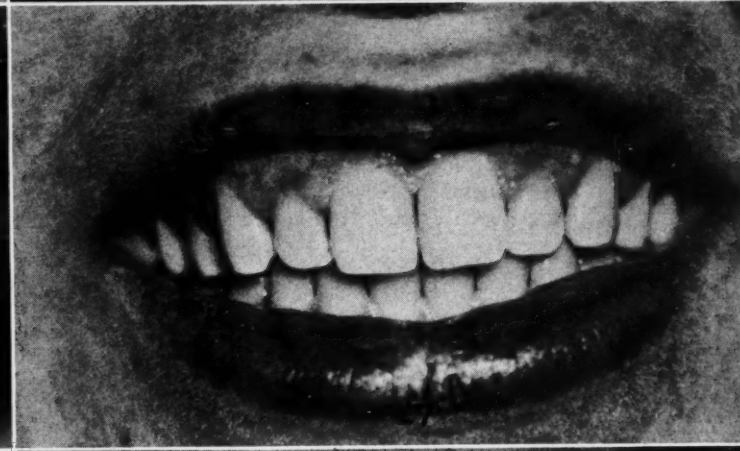
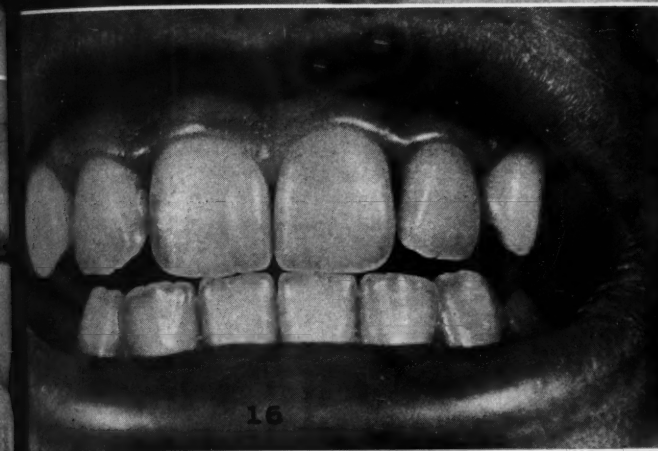
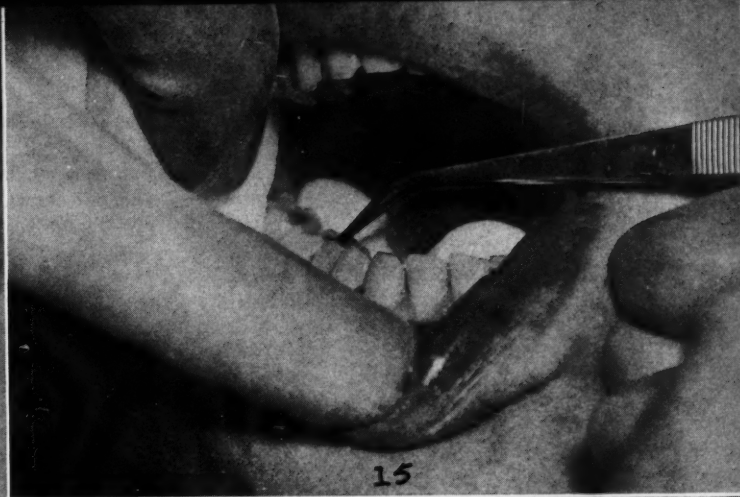
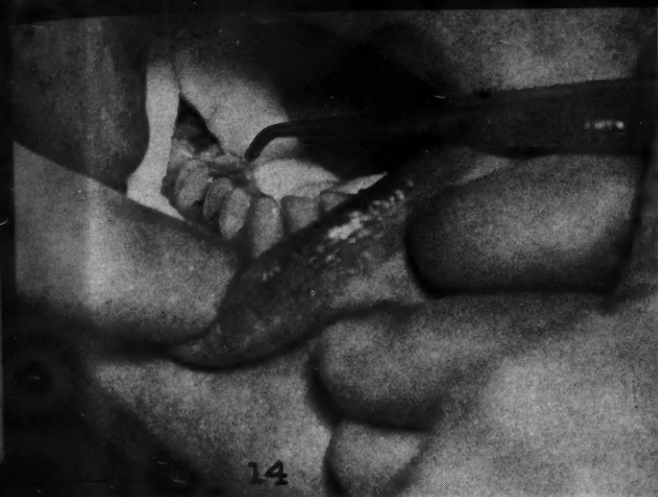


Fig. 14—Proximal surfaces of bicuspid and molars are best treated while under rubber dam. This may be done conveniently while pits and fissures are being restored. Both the solution and eugenol are carried between the beaks of stainless steel pliers and the proximal surfaces are flooded. The solution and eugenol are then worked down onto the surfaces and into any beginning carious spots by passing a ligature and rubbing the solution into the carious areas. In this case shown here, proximal surfaces cannot be flooded. Solution is dropped on contact and worked in with floss. Cotton rolls are used.

Fig. 15—Pits and fissures cannot be controlled with Howe solution. It is always advisable to dry these surfaces and carry solution onto occlusal surfaces; work it into fissures with explorer point and reduce with eugenol. Napkins or rolls are placed as shown and both solution and eugenol are carried between beaks of stainless steel pliers.

Fig. 16—Caries in these teeth have been arrested for seven years. Silicate restoration in mesial surface of right lateral had to be replaced during these years; nevertheless, solution has held other carious areas as found seven years ago.

Fig. 17—Etchings were stopped and have been held for six years. Picture was taken while teeth were dry. When flooded with saliva, stained spots are invisible from labial view.

Fig. 18—Lingual view of upper teeth of young woman whose anterior teeth have been under treatment for six months. No stains are visible from labial when teeth are flooded with saliva.

Fig. 19—Solution is not used on gingival stains or etchings. Nothing is gained. Staining should not be tolerated here. To remove stain would be as difficult as to prepare cavities and restore them. Repeated polishing is preferred here with the help of a small disc.

silver nitrate solution was so irritating to the pulp: free nitric acid was formed. Chemists also found that formic acid resulted when it was reduced with formalin. When eugenol was used as a reducing agent a hydrogen ion concentration of 8.50 to 9.50 resulted. Then it was understood why remarkable results were obtained when silver nitrate solution was reduced with eugenol. The acidogenic organisms were being destroyed and the acid of caries was being neutralized. The organisms undergo fixation and are transformed into the albuminate of silver and silver oxide. When the moisture is removed by drying, the spaces once occupied by mineral salts are filled with this insoluble, alkaline, metal-like albuminate of silver.

Every dentist is brought face to face with these problems almost daily: large, open cavities; failing restora-

tions; decay left under restorations—all result in near approach to the pulp. In our zeal to "remove every trace of decay," we formerly exposed great numbers of pulps. It is now accepted and proved procedure to remove the disorganized tissue, leave the organized dentinal matrix, and after thoroughly drying, to impregnate the area with silver nitrate solution and reduce with eugenol.

After twenty years' use of this alkalized silver nitrate solution in these deep-seated cavities with success, the method may be considered one of the important contributions to operative dentistry.

Summary

1. Ammoniacal silver nitrate is the only dependable disclosing agent for invisible, incipient, proximal caries.

2. This solution has proved to be the most effective method yet sugges-

ted in the control of proximal caries.

3. To preserve the vitality of the pulps in deep-seated carious cavities, ammoniacal silver nitrate offers a sane and scientific remedy.

4. Caries is the result of acidogenic organisms. This acid of caries precedes the breaking down of the tissues. If decay is allowed to remain in cavities, the acid of caries likewise remains.

5. In the use of silver nitrate crystals or the crystals dissolved in water, free nitric acid results. When Percy Howe added ammonia to silver nitrate, he alkalized it.

6. Incipient proximal caries is invisible. We cannot diagnose what we cannot see; therefore, coloring these surfaces is an indispensable procedure to dentists engaged in preventive dentistry.

1136 Medical Arts Building.

Examination for Appointment in the Dental Corps of the Navy

A competitive examination to select not more than twenty for appointment in the Dental Corps of the Navy will be held on July 5, 1938, at the Naval Medical School, Washington, D. C., Naval Training Station, Great Lakes, Ill., and Naval Training Station, San Diego, Calif.

A candidate for appointment in the Dental Corps must be a citizen of the United States, and must be between 21 and 32 years of age at the time of appointment, a graduate of a standard dental college, of good moral character, and of unquestionable professional repute.

Credentials relative to character, citizenship, date of birth, and education must be submitted and approved before an applicant can be authorized to appear for examination.

Senior students in dental colleges may submit applications to appear for the examination held next after their dates of graduation. They should submit with their applications and credentials a letter from the dean of their dental school stating that they are members of the senior class, and immediately after receiving their diplomas a letter from the dean or registrar of the dental school that they have received the Degree of Doctor of Dental Surgery or Doctor of Dental Medicine as the case may be.

A circular which contains full information relative to the Dental Corps and describes the method of making application for appointment may be obtained from the Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

Casting Without a Ring

MORRIS EIGEN, D.D.S., West Orange, New Jersey

ATTENTION HAS BEEN brought to the part that the resisting metal ring plays in producing ill-fitting gold inlays. It has been definitely found that the metal ring does produce distortions in the casting. Referring to this effect of the metal ring on the investment mold, Van Horn¹ states, "... the flask (metal ring) in which that investment is contained should have either a coefficient of thermal expansion equal to the expansion of the investment, or should have a flexible construction which will not unduly resist a uniform movement of the investment; otherwise, distortion of the mold may obtain." Rice² of Chicago found definite changes and distortions of the mold from ring resistance to both setting and thermal expansion. ("Ring resistance" is an expression of negative meaning; the term "reflected investment expansion" will hereafter be substituted because it better describes the movement of restrained investment.) As might be expected, Rice measured definite elongation toward the open ends of the ring, the investment mold being free to expand in that direction without restraint. What he failed to stress, however, was the infinite number of distorted molds that occur because the portions of the wax pattern facing the open ends are never in the exact position twice.

The necessity, then, for eliminating mold distortion resulting from reflected investment expansion becomes obvious. Some solutions have been suggested and tried. The use of a single lining of wet asbestos has been more generally advocated.

Contrary to prevailing opinion, especially with regard to the highly expansive investments, the single lining of wet asbestos does not entirely absorb the thermal expansion. This may be easily demonstrated by simply heating the ring containing the asbestos-lined cylinder to casting tem-

perature, and then attempting to thrust out the cylinder. At high heat, it will be found that the cylinder develops enough expansion to lock it against the metal ring; however, when the ring is allowed to cool, enough contraction occurs to permit easy removal of the whole cylinder with little more than finger pressure. This demonstrates that at high heat casting-temperature, resistance to investment-mold expansion actually does occur. As Rice has demonstrated, this metal ring acts to distort the mold.

This neglected phase of thermal ex-

pansion was recognized and attempts were made to deflect this thermal expansion from acting to distort the mold. Various devices were employed, such as: a split ring, an expanding ring, a perforated ring,³ and a paper ring. Other devices may have been tried but remain unrecorded.

Mold Size

The only precise information about the temperature and size of the mold at the exact moment of casting is provided by expensive pyrometer and thermocouple mechanisms. With the technique of casting without a ring,



Fig. 1—Investment cylinder being recovered from lubricated metal ring by means of thumb thrust.

¹Van Horn, C. S.: Compensation Casting Techniques, J.A.D.A. 20:224 (February) 1933.
²Rice, W. S.: Dimensional Dental Casting, J.A.D.A. 18:285 (July) 1931.

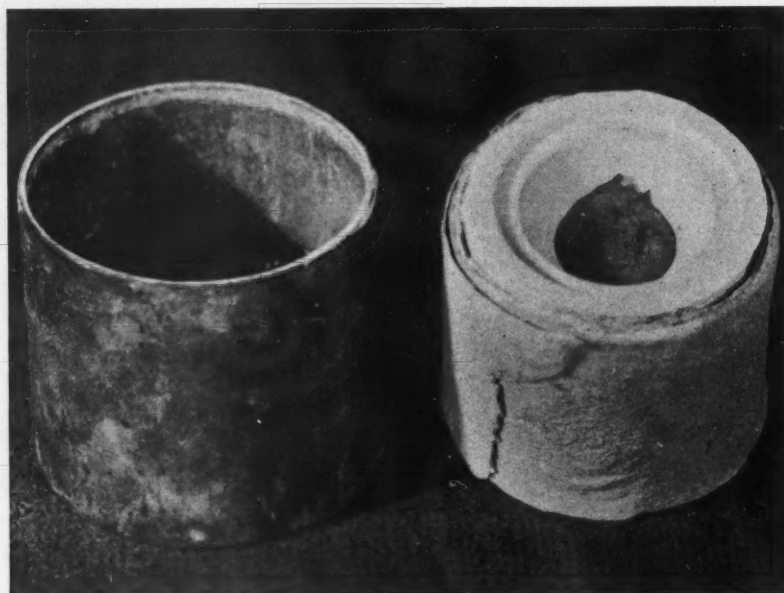


Fig. 2—Casting accomplished without a metal ring, indicating the presence of the continuous three-asbestos layers and the absence of investment cracks.

however, aside from eliminating mold distortion due to ring resistance, it will be possible to insert a metallic pellet into an open window of the asbestos-wrapt investment cylinder. This metallic pellet, always visible, will then provide exact information of the mold temperature and, therefore, mold size at the precise moment of casting.

If the various operations of transferring the investment cylinder to the centrifuge have caused a drop in the temperature and size of the mold, it will be an easy matter to heat the cylinder to the desired temperature, by observing such metallic characteristics as spheroiding. This inexpensive scheme would then provide a precision method that should be received more universally than thermocouple or pyrometer. With from ten to fifteen different metallic pellets, this precision control can be made flexible. The pellets can be easily recovered from the peripheral investment and used repeatedly.

Technique in Brief

The technique in brief is to eliminate the cause of distortion itself by eliminating the ring during thermal expansion. The ring is lined with

about three layers of wet asbestos; the pattern is invested and allowed to set for thirty minutes; the asbestos-wrapt cylinder is removed from the ring and placed in a furnace; moisture and wax are eliminated. The investment-mold is expanded and brought to a centrifugal type casting machine where sufficient preheated gold is melted and centrifuged.

Technique in Detail

1. The wax pattern is sprued securely at the point of greatest bulk and is then inserted into the crucible former. In order to prevent pattern distortion from a heated sprue former inserted into the substance of the wax, a small bead of sticky wax is placed on one end of the sprue former, carefully passed through the flame again, and then brought to the appropriate spot on the external surface of the pattern.

2. Sufficient asbestos is removed from the supplied roll to provide about three ring circumferences. This strip is wrapt around the index finger; introduced into the ring, and with the aid of a stream of water, carefully adapted to its internal surface. If a metal ring is used, it would be advisable to apply a lubricant, such as castor oil, to its internal surface, in order to prevent adherence of the asbestos to the metal.

3. A thick mix of cristobalite inlay investment is now prepared with proportions of thirty parts room temperature water to one hundred parts investment by weight. This is mechanically spatulated to produce a homogeneous mix, the maximum setting expansion, and a smooth casting surface.

4. A pointed camel's hair or sable hair brush, moistened, is dipped into this mix and the wax pattern carefully painted; the investment is blown around and out until there is an adherent coating. The pattern is completely covered with the mix.

5. The ring with the continuous lining of asbestos is placed over the pattern and set in place on the crucible former.

6. The remainder of the same mix of investment is then carefully poured into the ring and allowed to set for about 30 minutes. The mix should be introduced into the ring away from the central pattern and near the asbestos lining in order to prevent trapping air around the pattern. Vibrating with a rough or serrated instrument should be resorted to cautiously if at all. Small bubbles often become trapped on the under surface of the pattern. Careful propelling of the mix by means of the brush is more satisfactory.

7. The continuous three layers of asbestos, lining the ring, provide a cushion to absorb sufficiently all the horizontal setting investment expansion. The wet asbestos fibers become sufficiently attached to the set investment to permit removal, intact, of the asbestos-wrapt investment cylinder from the metal ring.

8. This investment cylinder, removed from the ring, is then placed in an open electric furnace; moisture is eliminated, and high heat applied by closing the furnace.

9. When all the wax has been eliminated and a cherry red is visible through the sprue hole, sufficient gold is preheated; the asbestos-wrapt cylinder is brought to a centrifugal type machine, and casting is completed. A centrifuge is to be preferred to a pressure type casting machine because the type of lever pressure in the plunger machine would crush the investment. If the "cradle" type of centrifuge (which is preferable) is not available, care must be exercised

³Herbert, W. E. and Thompson, A. R. F.: Research on Gold Casting, Proc. Roy. Soc. Med., January, 1937.

to have the cylinder centered accurately.

10. Care should be exercised not to over-heat the gold nor to use gold that has been over-oxidized and whose alloyed percentages have been thrown too much out of balance. Gas inclusions⁴ may cause voids, and overheating⁵ may exaggerate the shrinkage.

Advantages

The advantages of the technique described here are (1) free and unrestrained expansion of investment mold; (2) more perfect castings, and (3) solution to the problem of melted metal rings.

Comments

The incidence of melted rings, appears to be referable to the increased use of the electric furnace for burning-out purposes. The electric furnace, especially the less expensive ones which have no heat-control mechanism, subject the metal ring to a more intense heat than the old style open Bunsen flame; therefore, it is conceivable that a metal ring, left in an electric furnace for too long a time, might melt somewhat, the extent of melting depending on the length of time the current is on, and also on the character of the metal. Thin brass rings would be affected more than the thick gauge.

At first, especially constructed rubber rings were used without any asbestos, because it was felt that if the horizontal setting expansion would express itself against the soft rubber without being reflected to the open ends, the technique would be even further simplified by eliminating the procedure of lining the ring with wet asbestos. Although the soft rubber ring did absorb the horizontal setting expansion, the investment cylinder in too many instances produced cracks extending to the mold, when heat was applied. When it was found that the cylinder could as easily be removed when the stock metal ring was lined with asbestos, the rubber rings were shelved.

The greatest difficulty encountered in the early trials was from these

heat-born investment cracks. Whenever these cracks extended to the central mold, molten gold centrifuged, did not stop in the mold, but continued, unfortunately, on its way into thin air.

It was also thought perhaps the shape of the investment mass was an important factor. Attempts were then made to cast into concentric investment masses on the theory that the cracks appeared as a result of unequal heat stresses and strains owing to the cylindrical shape of the investment mass. Even here cracks appeared, although not so extensively nor so frequently.

It was felt that the method of heat application was the answer. Slow gas control and electric furnace heat were alternately applied without any improvement in results.

It was thought that possibly internal pressure of the expanding wax

might have caused the cracks. Cylindrical and concentric masses of investment without any wax patterns embedded were subjected to gas and electric heat with the usual appearance of cracks. When the investment cylinder was recovered with only one layer of wet asbestos wrapt around it, and subjected to heat, it was noticeable that although cracks did appear, castings were completed in about 80 per cent of the trials. With that observation, trials were then repeated with about three circumferences of wet asbestos, with surprising results. When this procedure was followed, cracks did not appear at all, and castings were completed in every instance. Here, then, was the simplest answer to Van Horn's search for an investing technique that allowed for free and unrestrained thermal expansion of the mold.

584 Valley Road.



Fig. 3—Distorted metal ring.

⁴McGehee, W. H. O.: Textbook of Operative Dentistry, Philadelphia, P. Blakiston's Son & Co., 1930, p. 608.

⁵Ward, M. L.: American Textbook of Operative Dentistry, Philadelphia, Lea & Febiger, 1926, p. 473.

An All-Purpose Dental Camera Stand

S. HARRINGTON STEIN, A.B., D.D.S., New York

THE RECENT INTRODUCTION of the candid camera has made photography enthusiasts of many who previously considered a camera as something one had to face with reluctance on special occasions. Those who mastered the comparatively simple technique for using a candid camera soon realized that they had in their hands an efficient and faithful instrument for recording the many changing scenes and people they met during their holidays and vacations. The conversion of the camera from an instrument for pleasure to one of practical usefulness was the inevitable result in the case of many dentists who had become amateur photographers. I found it comparatively simple to convert my camera into an efficient dental camera. It was merely a matter of attaching a ground glass focusing screen, which is standard equipment in most of the better cameras. There was, however, some difficulty in holding the small camera in the desired position for dental records. The standard tripod proved unsatisfactory for this purpose. The camera could not be raised or lowered quickly or moved near enough to the patient to take close-up pictures of dental restorations, malocclusions, or pathologic conditions of the mouth and face. It was with a view to eliminating these difficulties that I developed this special camera stand (Figs. 1 and 2).

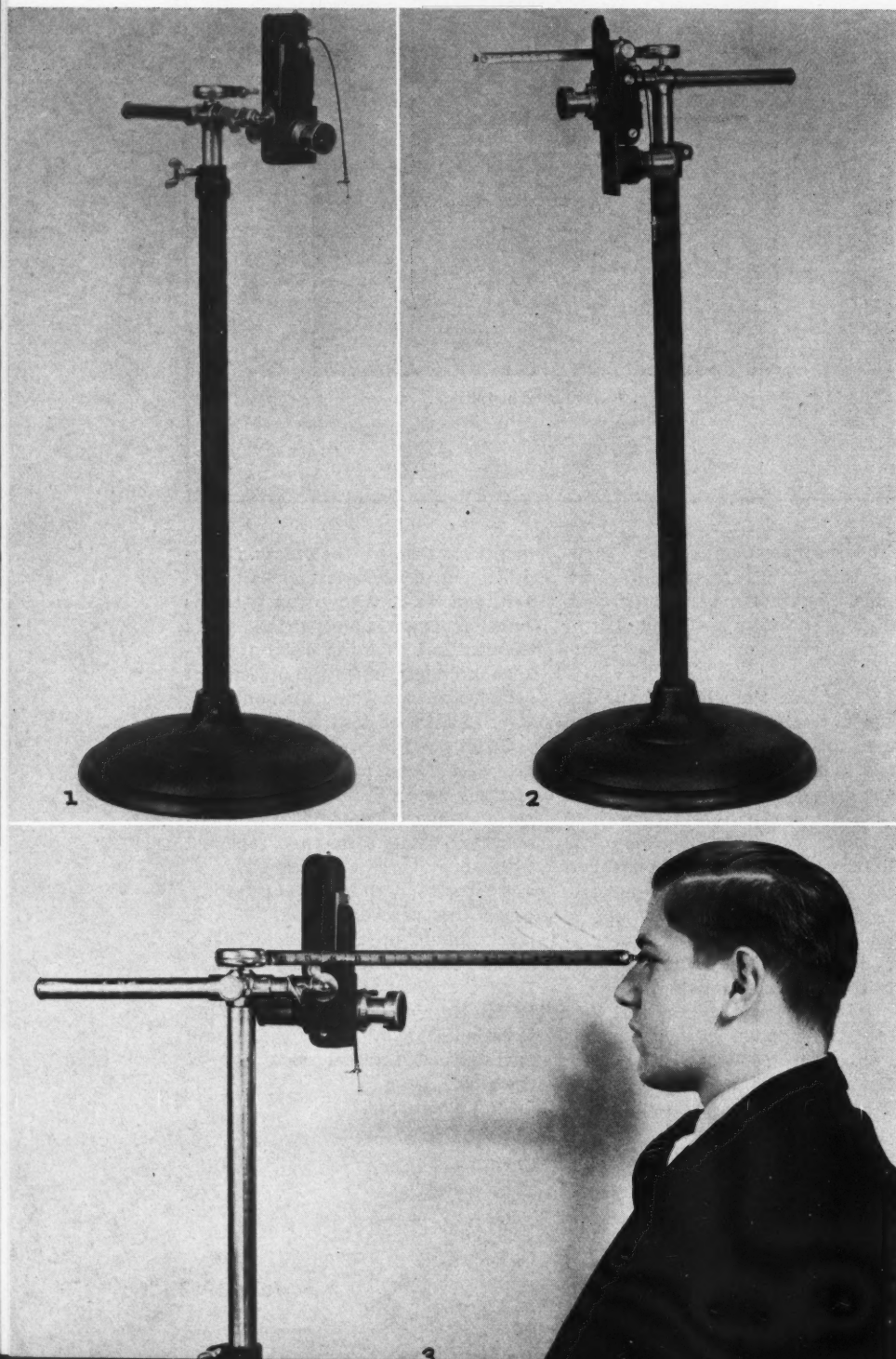
Construction of Stand

The stand consists of a heavy cast-iron base fitted with an upright 32 inches in height. A 1 inch bar of the same height fits inside this upright which is equipped with a spring collar and lock-nut for securing the inside pipe at any desired height. The top end of the inner tube is fitted with a hollow round casting, through which a round 10 inch bar slides at right angles. This bar may be stopped anywhere along its length by means of a lock-nut. At the extreme end of the

Fig. 1—Front view of camera stand. Camera is in position for focusing.

Fig. 2—Side view of stand. Camera has been dropped into position for taking picture. Note magnifying eye-piece attached to ground glass screen.

Fig. 3—Camera in position for taking front view of patient's face. Note extended measuring rule and nose-piece in place.



horizontal bar is a universal swivel, equipped with a standard screw for receiving the camera. By means of the universal swivel the camera may be securely locked in any position. At the top of the stand is a flexible steel rule which has attached to its anterior end a nose-piece, designed to fit the saddle of the patient's nose (Fig. 3). By means of this measuring device the exact distance from a fixed point on the patient's face to the film may be easily recorded. This is useful not only in setting the camera at the correct focal distance, but also in duplicating orthodontic records at a subsequent date.

Practical Application of Stand

Fig. 3 shows the use of the stand in taking a front view picture of a patient before orthodontic treatment.

1. After the camera has been placed at the correct height the patient's head is placed upright and the nose-piece is adjusted to the saddle of the nose.

2. The camera is then moved forward or backward to the correct focal distance by means of the horizontal bar until it is about 22 inches from the patient. This can readily be accomplished without moving the stand itself.

3. After the fine-focusing on the ground glass screen has been accomplished (a magnifying eye-piece is shown in the illustration as an aid in critical focusing), the rule is made to disappear automatically by means of a spring release on top of the casing. The patient is now ready for the picture.

4. The profile of a patient is taken in the same manner as the front view. A hinge joint on the nose-piece permits easy recording of the distance when taking a profile picture.

Lighting

The correct lighting of subjects to be photographed is something one has to determine for himself. I use a twin light reflector-stand equipped with two standard photoflood bulbs placed on each side of the patient at a distance of about 64 inches. A thin piece of linen cloth or Japanese silk over the reflectors helps to diffuse the powerful light from the photoflood bulbs and prevents the strained look patients exhibit when suddenly sub-

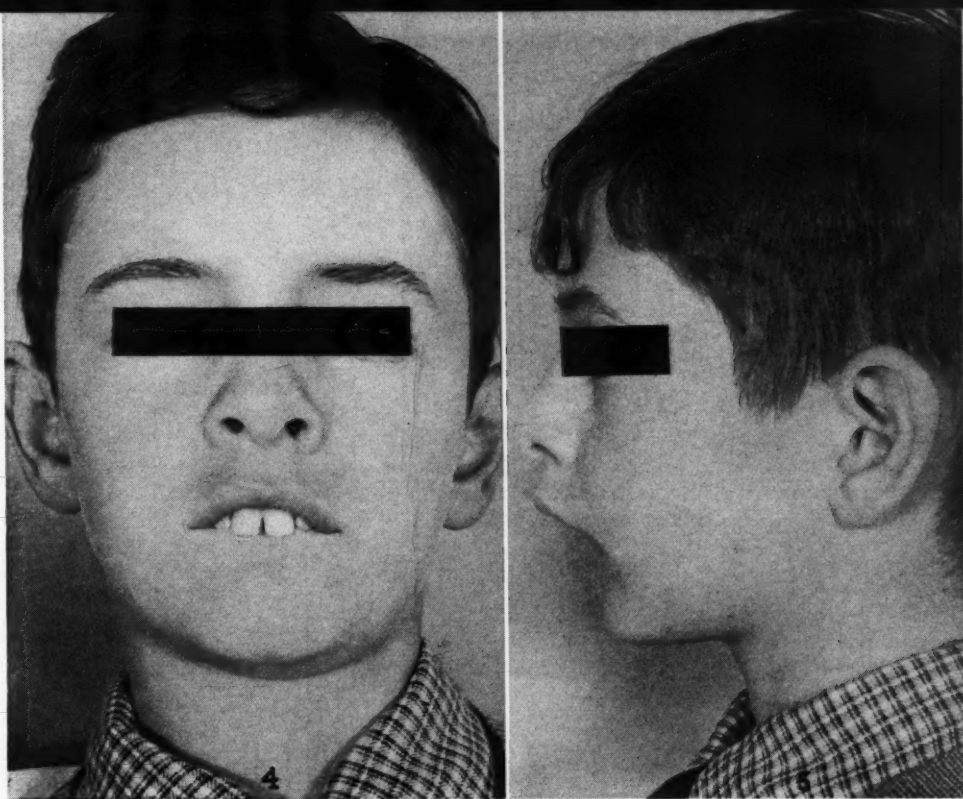


Fig. 4—Enlargement (5 by 7) of front view of patient.

Fig. 5—Enlargement (5 by 7) of profile view of same patient shown in Fig. 4.

jected to an intense light. The diffusion of the light also prevents the harsh tones seen in photographs that have been taken with incorrect lighting. To get greater contrast in photographs one photoflood light may be employed, a white cardboard or an aluminum plate being used to throw reflected light on the other side of the patient's face. It is best to take a series of test pictures under different lighting conditions to determine the best arrangement.

Films

In taking front and profile pictures for orthodontic records with a miniature camera I have found DuPont Superior Panchromatic 35 mm. film best suited. It is best to buy the film in lengths of 100 feet, cutting it up into 18 inch strips. Each strip will yield about twelve pictures. Good results have been obtained with 12-5 opening of the shutter at a speed of one eighth of a second, using a 50 mm. 3.5 Elmar lens. After developing these negatives in a fine-grain solution (Finegrainol developer), and washing and fixing in the usual manner, they are easily enlarged to 5 by 7 inches

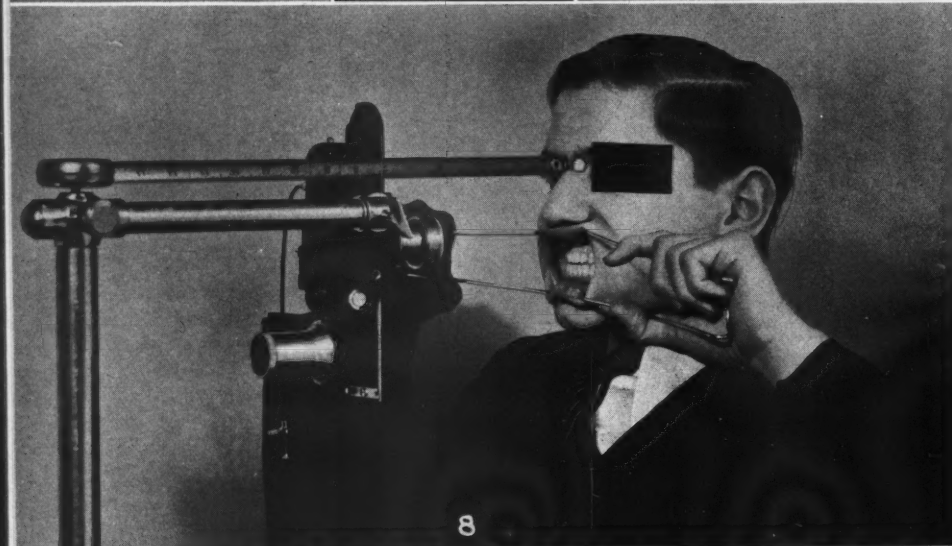
(Figs. 4, 5, 6, and 7) in any standard enlarger. The Finegrainol developer has been found to give fine, lustrous negatives, which can be enlarged without showing grain. It is economical to use because it comes in powder form and may be mixed into solution when needed. The same solution may be used from fifteen to twenty times.

Intra-Oral Records

Close-up records of teeth and dental restorations are also easily obtained with this stand. The camera is moved forward to about 10½ inches from the patient. With the aid of a pair of wire lip retractors (Fig. 8) the required view is obtained. The horizontal bar permits this forward movement of the camera without moving the stand. The lights are, of course, moved closer to the patient when taking intra-oral records. Forty-four inches has been found to be about the correct distance. The aperture and exposure are the same as for the front and profile views.

Photographs of Models and Dentures

The stand is so constructed as to



make it a simple matter to turn the camera face downward over a table for taking photographs of plaster casts, dentures, or roentgenograms (Fig. 9). The horizontal bar permits the camera to swing over a table or bench, and hold it securely in the desired position. Plaster casts are best photographed on black paper (x-ray film wrapping is ideal). Little light is required for photographing white plaster casts (two 40 Watt bulbs at a distance of about 2 feet have been found satisfactory). The photographing of roentgenograms must be done by means of transmitted light. The x-ray viewer is ideal for this purpose.

Photostatic Copies

It is often desired to photograph an illustration in a textbook or dental magazine for use in connection with a manuscript on a dental subject. This is easily done with this stand by pinning the magazine to a vertical board and placing the camera in position.

Conclusion

Photography is an invaluable aid to the dentist in keeping records of completed work; also in showing patients the esthetic improvement that good dentistry may accomplish. With a little effort the average dentist may make his pleasure-camera a useful instrument not only in keeping more satisfactory records but in presenting his services to new patients. The developing and enlarging of these miniature pictures may easily be incorporated into the usual routine of the average dental office. The stand described in this article has proved to be an invaluable aid in adapting the miniature camera to dental purposes. It may also be used with any of the other larger cameras having ground glass screens.

509 Madison Avenue.

Fig. 6—Enlargement ($3\frac{1}{2}$ by 5) of intra-oral view with teeth closed. Same patient shown in Figs. 4 and 5.

Fig. 7—Enlargement ($3\frac{1}{2}$ by 5) of intra-oral view with mandible in the most anterior position. Same patient as in Figs. 4, 5, and 6.

Fig. 8—Camera in position for intra-oral view. Note how horizontal bar permits

camera to be moved close to the patient. The steel rule is in position for recording distance of patient to film.

Fig. 9—Camera in position for taking photographs of a set of dental casts. The magnifying eye-piece is used for critical focusing.

The Editor's Page

F. W. BRODERICK of England recently came to the United States and delivered a series of sixteen lectures in St. Louis under the auspices of Washington University. Everyone who has read Broderick's book¹ is familiar with the principles on which he bases his explanation of disease. Whether we are prepared to accept his explanation, whether his theories can stand the test of clinical practice, will concern us in the future. Now Broderick's point of view is provocative, built on accepted scientific grounds, and cannot be dismissed with "contempt prior to investigation." Broderick follows Humphrey Rolleston in his definition of health: "Health is a state of body and mind resulting from the successful adaptation of the living organism to external and internal factors." All disease is conceived of by this school of thought as the failure of adaptation; all diseases spring from common roots. What we have heretofore classified as diseases are regarded by Broderick as mere end-points, the individual expressions of physiologic disharmonies.

There is a margin of safety and natural elasticity of the body within which changes may occur without injury to the organism. When this margin of safety is past there sets in slowly and insidiously or quickly and dramatically what we call disease. However it expresses itself clinically, the ground has been prepared far in advance of symptoms by physiologic disequilibrium. The concept of physiologic disequilibrium must project far beyond morbid anatomic lesions and gross functional changes. The physical change in tissue that we call the lesion of dental caries and the physical change in tissue that we call the diseased heart are both examples of the individual response to an assault on the organism. The response varies in amount and nature for each person. The kind of response is determined by the individual constitution which is intimately linked with the vegetative nervous system, with the endocrine glands, and with the colloidal state.

The "soil," according to Broderick, is the individual diathesis; the "seed" is the bacterium or the toxin or any other kind of invader. In the past, with our roots deep in humoral and cellular pathology, we have stressed the

"seed." Broderick emphasizes the "soil." We are all familiar enough with the nervous system, both the sympathetic and the parasympathetic, and with the endocrine glands. Because Broderick's theory emphasizes the colloidal state, some mention should be made of this subject.

The colloidal state describes matter in ultra-microscopic particles in suspension or dispersion in solids, liquids, or gases. Colloidal particles vary in size between $1/10,000$ and $1/1,000,000$ of a millimeter. The size of the colloidal particle determines its physical-chemical characteristic. Each may be thought of as a small solar system with an inner structure of protein which carries a positive charge. The colloidal particle also has within its structure urea, sugar, and inorganic salts. About the periphery, whirls negative-charged electrons.

Life is only possible in colloidal dispersion. Because of the nature of the colloid and particularly because of its electric character, it is subject to hydration and dehydration. It can draw into itself or expel from itself metallic ions and chemical bodies in the dispersion medium. The hydration of the colloid or its increase in size is associated with the stimulation of the parasympathetic system, with an alkalosis, and with pyorrhea. The dehydrated colloid is smaller. It is associated with stimulation of the sympathetic system, an acidosis, and with dental caries.

The dehydrated colloids are usually associated with acute disease; whereas hydrated colloids are associated with chronic disease processes. The treatment of all disease conditions according to the Broderick concept, which draws heavily from McDonagh, is to restore the colloidal equilibrium. Because the type and size of the colloidal particles in the blood stream determine the type of disease, the followers of McDonagh use drugs of various kinds to change the colloidal chemistry. For example, the dehydration of the colloid which is associated with dental caries is treated by using insulin, the action of which restores the colloidal balance.

In a subsequent issue of this magazine, details of treatment for periodontal disease and dental caries, according to this colloidal theory, will be discussed.

¹Broderick, F. W.: *The Principles of Dental Medicine*, Second Edition, St. Louis, The C. V. Mosby Company, 1936. Discussed in The Editor's Page, DENTAL DIGEST, 42:124 (April) 1936.

Functional Arrangement of Artificial Teeth from Stone Paths

WILLIAM A. COLBURN, D.D.S. and MARIO F. ARATA, San Francisco

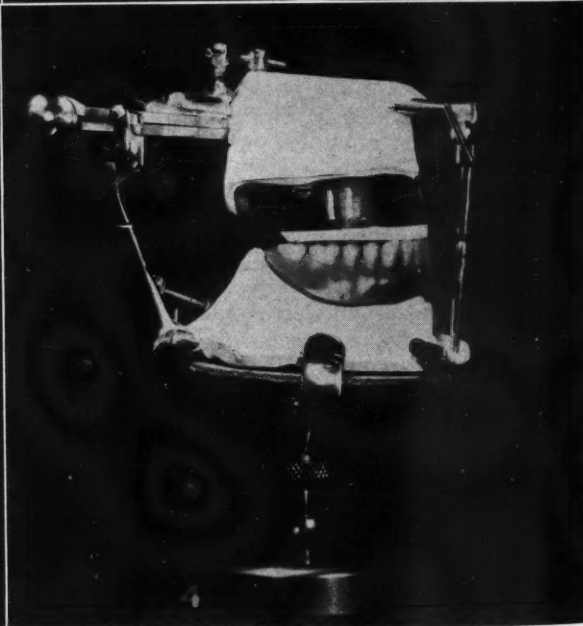
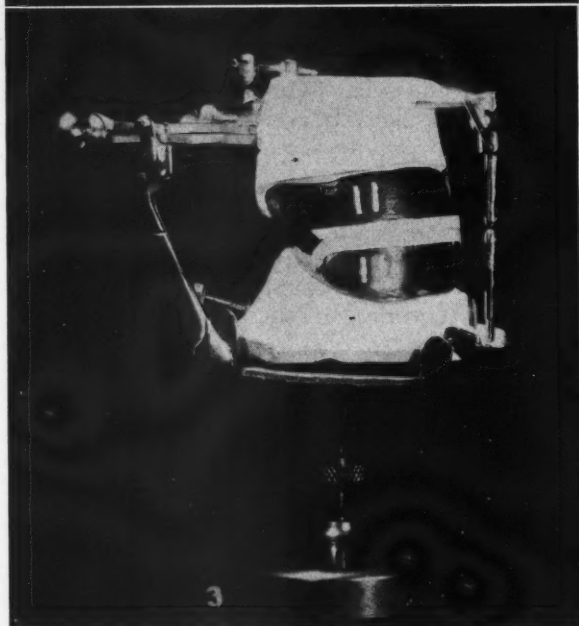


Fig. 1—Bite attached to plain-line instrument (Gysi Simplex with door hinge condyles).

Fig. 2—Wax condyle paths and curves (Gysi Simplex with 10 de-

gree incisal table as patient).

Fig. 3—Stone condyle paths and curves.

Fig. 4—Mandibular teeth arranged to stone path.

Technique

Functional Arrangement of Artificial Teeth from Stone Paths—1. Functional arrangement of artificial teeth from stone paths without extra-oral registrations, inter-oral checks, or adjustable articulators may be obtained by reproducing the patient's plane of occlusion and paths in wax

and then converting the maxillary wax paths into stone or plaster.¹

2. The mandibular teeth are accurately arranged to the stone maxillary paths, with a plain-line articulator, and the completed set-up for functional balance is perfected in the mouth with the aid of articulating paper and stones.

3. After the incisal and occlusal surfaces of the mandibular teeth are ground and arranged to the maxillary paths and mandibular ridge relations, the procedure is then the same as for

a maxillary artificial denture to function with natural mandibular teeth.

4. An adjustable articulator may be used for increased accuracy of balanced occlusion by changing both maxillary and mandibular wax paths to stone and adjusting the instrument to the various paths or curves. This additional refinement of an adjustable instrument is indicated and helpful in balancing the maxillary teeth to the plane and curves of the mandibular set-up.

5. The bite is attached to the ar-

¹Meyer, F. S.: A New Simple and Accurate Technic for Obtaining Balanced and Functional Occlusion, *J. A. D. A.* 21:195 (February) 1934; Balanced and Functional Occlusion in Relation to Denture Work, *J. A. D. A.* 22:1156 (July) 1935.

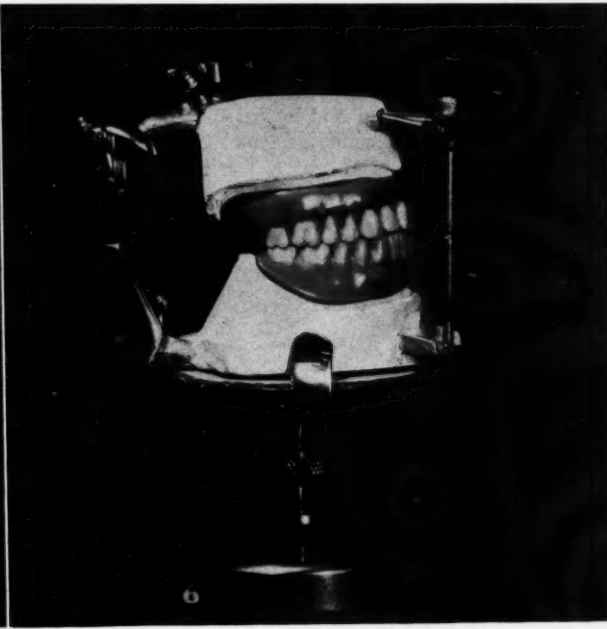
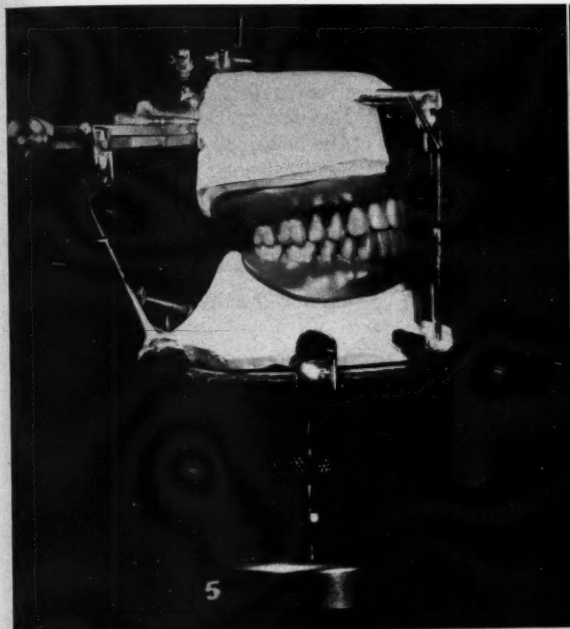
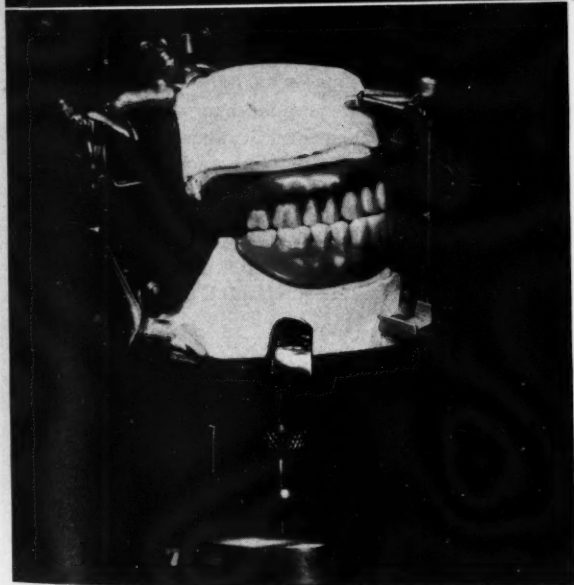


Fig. 5—Maxillary teeth set to the mandibular arrangement.

Fig. 6—Arrangement of teeth completed.

Fig. 7—Completed case in balance and curves of the Gysi Simplex with 10 degree incisal table but made on a door hinge articulator.



tulator by the technique recommended for the instrument selected (Fig. 1). The bite should include the plane of occlusion, height of the mandibular teeth, centric and equalized centric relation.

Wax Condyle Paths—1. Construct another set of baseplates and bite-blocks, duplicating the plane of occlusion, length, and height of the maxillary and mandibular bite-block of the original bite.

2. About two thirds of the thickness of the wax to be used (Meyer counter or Kerr utility wax) is cut from each compound block before the wax is added; both surfaces of the waxed bite-blocks are tin-foiled and lubricated before the patient makes the right and left lateral and incisal excursions, that is, the condyle paths (Fig. 2).

3. The vertical dimension of the condyle paths may be stopped from 1 to 2 mm. opened from the original bite, but the height of the mandibular bite-block should be the exact height

of the accepted height of the mandibular anterior teeth.

Stone Condyle Paths—The bite-blocks with the wax paths are attached to the cast with sticky wax; then the wax on the maxillary bite-block is removed and the wax paths are converted into stone by bringing the roughened surface of the compound maxillary bite-block in contact with a mix of stone placed on the mandibular wax path.

Mandibular stone paths are indicated only when adjustable articulators are used, and the procedure is the same as for the maxillary path except that a separating medium should be used on the maxillary stone path before pouring (Fig. 3).

Mandibular Teeth Arranged to Stone Paths—Beginning with the central incisor the mandibular teeth are arranged to the correct ridge relations and paths of the maxillary bite-blocks (Fig. 4). Low cusp teeth (Trubyte Twenty Degree) are recommended as less grinding of the oc-

clusal surfaces will be necessary for conformity to the occlusal curves or paths. Steep paths are seldom experienced, but curves within curves occur, which are beyond the adjustment range of nearly all articulators.

Maxillary Teeth Set to the Mandibular Arrangement—Starting with the maxillary first molar, right or left, the maxillary bicusps and molars are ground, balanced, and set to the mandibular arrangement; this completes the mechanics of the bicusps and molars. The maxillary anterior teeth are then arranged for esthetics and incisal balance.

The mold of the maxillary or mandibular anterior teeth may be changed or rearranged for esthetic requirements without altering the mechanics of the bicusps and molars. The vertical dimension may be changed without disturbing the arrangement of the mandibular teeth.

450 Sutter Street.

Clinical NOTE

Foreign Body

A MAN, AGED 45, received full general physical examination and a full-mouth roentgenographic examination. The roentgenograms revealed a root-tip and what was interpreted as a fractured hypodermic needle.

The patient presented to us on



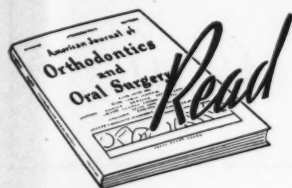
Needle fragment apparently in alveolar tissue.

January 18, 1938, with the mounted films and came for a full-mouth extraction. The root-tip was first removed, and an attempt was made to find the fractured needle. A continuous incision was made from the second bicuspid region (the position of the root) to the distal portion of the

first molar area (the apparent location of the needle). The needle was not located in the tissue of the lingual or buccal flap by means of a diagnostic light.

At this time another roentgenogram was taken at a horizontal angle which showed the apparent needle fragment completely out of the osseous tissue. An x-ray film was placed in the muco-buccal fold between the cheek and the buccal alveolar process, and the roentgenogram now revealed the radiopaque object as being somewhere in the cheek, not in any of the alveolar tissue as at first appeared.—D. ESTHER E. SVOBODA, D.D.S. and F. J. SVOBODA, D.D.S., Cozad, Nebraska.

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Editor in Chief, *The American
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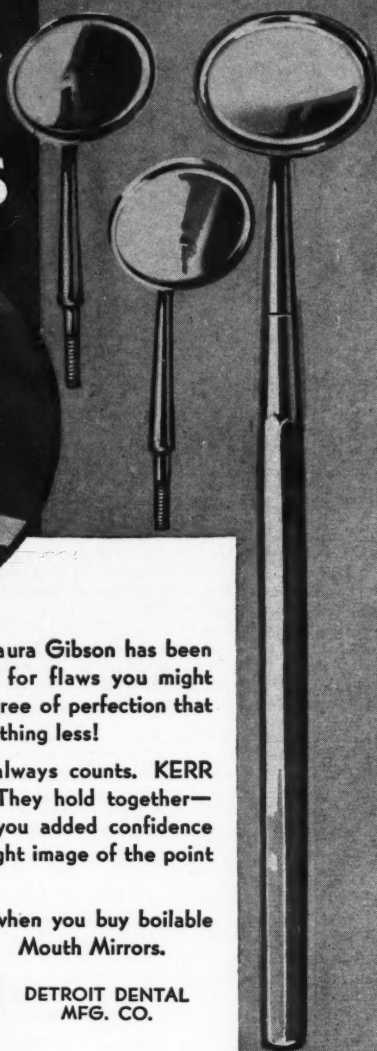
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NOTES ON THE

Cuff

April 23—A recent publication describes the propaganda techniques of German fascism. Even the American foreign correspondents in Berlin seem to fall victims of the propaganda of Goebbels. Now there comes a dental story out of Berlin which is a mixture of the racial superiority myth of the Nazis and the notion of supernatural ordination to save the beauty of the world. This story stresses the beautiful women of the Reich who through the generations have been victims of the kind of dentistry that prescribed gold for restorations. This choice bit of hokum was reported in *The Chicago Daily News* of this date: "From the tragic experiences of women who had had to 'wear' gold teeth up to now, I win the strength to pursue my ideal of beauty and my goal with ever-increasing intensity . . . Our goal—to liberate the mouths of mankind and, above all, women from ugly gold—will be achieved not only by my own efforts but because life itself and the feminine sense of beauty demand it." Thus spoke W. W. Reichel, apparently the manufacturer of some kind of alloy.

In America we present our metallurgic achievements as such and do not attempt to gain recognition of them by holding them up as symbols of political or nationalistic ideology. It is to be hoped that in America, metallurgy will remain on a hard, firm base.

April 26—*La Semaine Dentaire*, issue of May 8, carries the obituary of Georges Villain who at the age of 57 was killed in a five-tragedy automobile accident on April 26, along with his two sons, his daughter-in-law, and his sister-in-law. Georges Villain was an important figure in French dental life. He was the author of numerous scientific lectures and publications, both French and foreign. He was a noted orthodontist whose contributions to the field through the Society of Odontology of Paris, the National and International Dental

(Continued on page 270)



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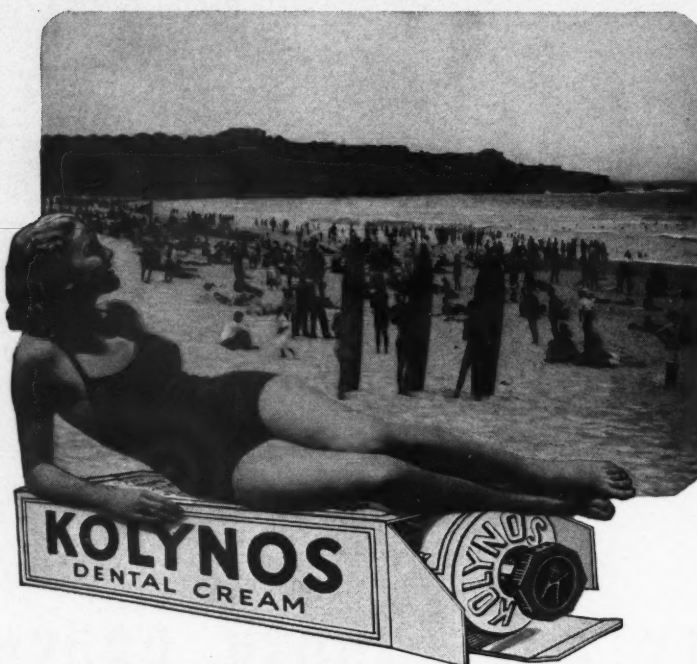
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Please Note

SPECIAL ANNOUNCEMENT

On Pages

278 - 279

Congresses, and the dental literature influenced this specialty even in America. Doctor Villain held professorships and directorates at institutions of learning in France as well as the presidency and other offices of trust and honor in the important French dental societies. Georges Villain is recalled here as one of the distinguished foreign visitors to the Chicago Centennial Dental Congress during the 1933 Century of Progress Exposition.

April 27, 28—Up and away at dawn to Milwaukee and the meeting of the Wisconsin State Dental Society. C. R. Lawrence of Enid, Oklahoma discusses aspects of practice management. He points out that there are three free things found in contemporary American life: (1) free air at the gas station; (2) free soul service from the clergyman; (3) free dental examinations and consultations. On the pleasant side, he mentions, however, that dentists are in the upper 8 per cent of the national income group. On the other hand, he reminds us that two thirds of the widows of dentists must work or are indigent—this, because the dentists have not trained their wives in business affairs. Lawrence's copy of A DENTIST'S WILL is herewith given:

"A dentist who was told that he could live only one month, called on a lawyer and said: 'Fix it so that my overdraft and notes at the bank go to my wife. She can explain them. My equity in my car goes to my son. He will have to work to keep up the payments. Give my 'good-will' to the supply houses. They took some awful chances on me and are entitled to something. My equipment, you can sell to the junk man for your fee. He has had an eye on it for several years. I want six of my creditors for pallbearers. They have carried me so long that they might as well finish the job."

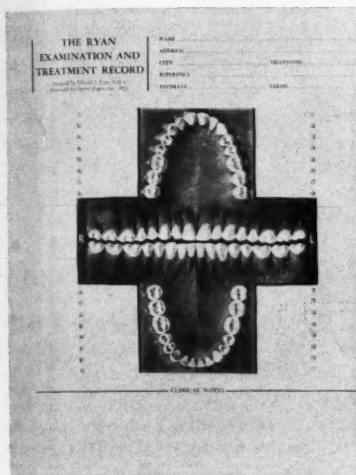
Meniffee Howard of Denver speaks next with his realistically colored motion pictures of oral surgery procedures. His photography is so excellent that one can almost smell the pus of the abscesses that he evacuates—and that is realistic photography.

Bert Hooper of Lincoln, Nebraska urges the artistic ideal in prosthetic dentistry: A dentist is part sculptor, part painter, part architect. He is concerned not only with utility but with beauty. Hooper's motion pictures on immediate denture technique

(Continued on page 272)

Suggestions for the use of

The Ryan Examination and Treatment Record



TYPES OF PENCILS

Yellow	Mongol No. 867
Gray	Mongol No. 819
Red	Mongol No. 866
Blue	Mongol No. 865
Yellow	Castell No. 40
Gray	Castell No. 57

Mongol pencils are made by Eberhard Faber; Castell by A. W. Faber.

SUGGESTED SYMBOLS

Each dentist may develop his own system of symbols but the following specific markings have been found simple and adequate:

Soft Lead Pencil—(a) Porcelain fillings are indicated by a pencil outline.

(b) Porcelain jacket crowns and bridges are shown by cross-hatching with lead pencil across the corresponding tooth or teeth on the chart.

(c) Missing teeth are blocked out with a soft lead pencil.

(d) Abrasions are represented with soft lead pencil.

Blue Pencil—(a) Cavities are indicated with blue pencil.

(b) Advisable restorations are demonstrated with blue pencil.

Red Pencil—(a) A red line is used to indicate the presence of a root canal filling.

(b) A red outline shows the presence and position of an impacted tooth.

(c) Red pencil is used to represent pulp involvement.

(d) A red "X" is made across a tooth to indicate that its extraction has been advised.

(e) Pyorrhea pockets are represented in red along the crest of the alveolar ridge (and a notation is made at the bottom of the chart if extensive gingivitis is present).

1. The Ryan Examination and Treatment Record may be had in pads of fifty charts each. These pads fit conveniently in a standard 9½ by 11½ inch loose-leaf notebook which may be purchased at a five-and-ten cent or variety store.

2. Alphabetical dividers may be made by using a ten cent package of plain white paper of the same size as the charts with holes punched at the same distances, and a fifteen cent box of alphabetical index tabs. The holes are reinforced.

3. It is a good plan to keep a blank sheet of paper between the charts to prevent possible smearing of crayon or pencil markings; but this is not essential.

4. A fresh pad of charts may be kept ready for use in back of the notebook of active records.

5. The various types of restorations and their location in a particular mouth are shown with the use of polychrome pencils—gray, for amalgam; deep yellow, for gold. White pencil does not show up very well; consequently, porcelain may be indicated with soft lead pencil outlines or cross-hatching.

6. Spaces provided beside the quadrants with numbers corresponding to the teeth permit special notations concerning each tooth. As treatment progresses the blue markings indicating needed dentistry are erased, and the nature, location, and date of placement of each new restoration are recorded. Additional clinical notations are made if necessary in the space provided for that purpose below the chart itself.

7. It is essential to be consistent in any system of symbols or markings developed. To insure consistency, it is well to have a key page in the front of the notebook.

8. The exact record of conditions found in the average patient's mouth at the original examination can be completed in fifteen or twenty minutes, and the time it takes to keep a chart up to date is negligible.

9. When a chart is completed the necessary data (name, address, telephone, reference, estimate, and terms) are typewritten in the spaces provided at the top of the record. The date of the original examination is also recorded in order that the treatment dates (as shown in the quadrants at the sides of the chart) will be recognized as subsequent to the date of the original examination.

10. Provision is made on the back of the chart for bookkeeping records. This is merely for the convenience of dentists who wish to keep all records together, but may be ignored by dentists who have a satisfactory book-keeping system which they need not and do not wish to discard. The Ryan Examination and Treatment Record may be employed as an additional or supplementary record to any established method of record-keeping dentists may have.

11. Although the Ryan Examination and Treatment Record was designed for the dentist's own convenience in his practice, the charts have been found to have a definite informative value in explaining conditions to patients. The charts are also particularly helpful in reporting dental conditions of patients to cooperating physicians.

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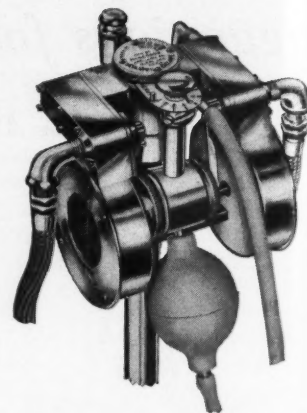
is superior teaching material. All dental meetings in Wisconsin are characterized by fine punctuality and respect for the essayist.

April 29—Another item from the foreign news: Cartoonists and caricaturists are constantly poking fun at dentists. Now a dentist in a London hospital, so the *New York Times* informs us, recently produced a motion picture, "Tell Me If It Hurts." His Lordship, the president of the Board of Censors, rejected the movie with the opinion "that the film held the dental profession up to odium and ridicule." The film was found to be objectionable particularly because of its emphasis "on drills and other instruments of torture and one bit of dialogue was considered extremely offensive. A dentist says to a patient when he gets him in his chair: 'You beat me at golf. I must have my revenge sometime.'" Bear in mind that this film was written by a dentist and was rejected by Lord Tyrrell, president of the Board of Film Censors. It is not likely that any derogatory cartoon or motion picture about dentists would be rejected in the United States.

May 4—The Research Commission of the American Dental Association invites all investigators, throughout the world, in the field of dental caries, to send summaries of their published observations and conclusions to William J. Gies, Secretary, Advisory Committee, Research Commission of the American Dental Association, 632 West 168th Street, New York, New York. Those cooperating are asked to indicate the location of their published reports and to append clarifying statements. These summaries with bibliographic references and supplementary interpretive comment will be assembled and indexed in the alphabetical order of the names of the authors and according to the subdivisions of the field. The Commission will later decide whether the compilation will be published in toto or abstracted for publication.

May 9 to 12—Along the way to Peoria, Illinois to attend the Illinois State Dental Society meeting, Frank Hurlstone and I examine a David and Goliath freight train wreck. A farm boy crashed into a freight train and dug up the right-of-way. The farm boy was tossed in a field and escaped with a few scratches on his epidermis.

Three days of meeting-going. Chatting in the lobby. With Hurlstone and Frank Stewart, dentistry's stalwart



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in the Illinois legislature, examining the places where we finally consume the products of Mr. Walker's huge Peoria distillery.

May 14—The enthusiasts for educational publicity tell us that the only thing that keeps people out of the dental office is that they have never heard of dentists and dental services. We have long suspected, however, that because the consumption of goods is not a rational procedure, people prefer to spend their money for pleasure rather than for dental care. I recently met four of my country neighbors, two of whom are hired men who are paid jointly fifty dollars a month. They just finished paying for their car; now they bought a fine new one hundred dollar radio. The elder is edentulous in the lower jaw; he lost his set of lower teeth several years ago while fishing and he has never got around to having new ones made; the younger man needs a few bridges here and there. Between them these men could probably not raise twenty-five dollars in cash for an emergency, but they do have a car and a radio, because these things give them pleasure and they put them before dental care.

A horse-trader was my third rural encounter. He has no upper teeth but a fine appetite, capacity, and ability to buy liquor for which he hasn't needed an upper denture.

My fourth interview was with a young factory hand in his twenty's who was visiting his father's farm. One needed none of Jimmy Prime's silver nitrate to detect the interproximal caries in this young man's anterior teeth. He, too, had a few installments hanging over his head on the side of pleasurable things, so he wasn't considering dental care for a time. To be sure, the dental treatment for these country people, if they ever got around to having dental care, will be costly, because of their own neglect. Dental neglect rather than treatment is what is found expensive. Treatment in time for the simple things constitutes no serious economic problem for anyone. That should be our story.

May 23—Recalling my youth by rising at sun-up to drive to the College of Dentistry of the University of Illinois to talk before the graduating class on practice administration. One young hopeful wondered whether he would have time to spend fifteen or
(Continued on page 274)

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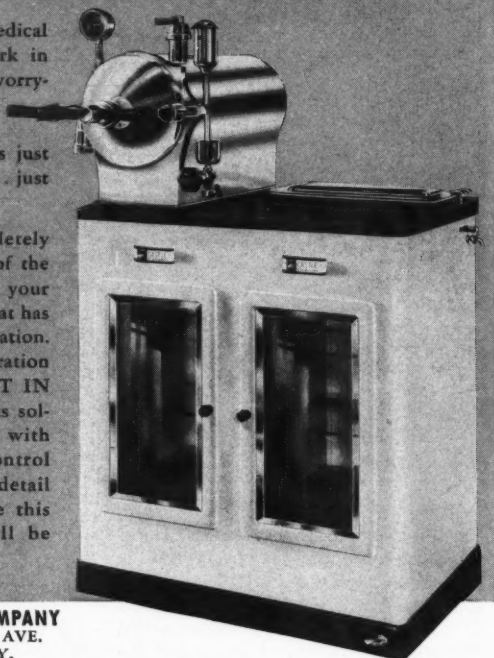
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twenty minutes with each new patient to make out a complete examination and record chart. Such is youthful optimism!—E. J. R.

DENTAL MEETING

Dates

American Dental Society of Europe, Stockholm, Sweden, August 1-3.

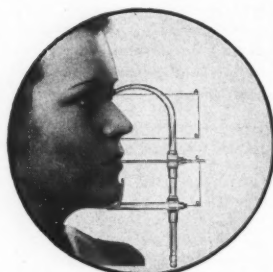
The State Board of Registration and Examination in Dentistry of New Jersey will hold its annual examinations, commencing June 27, and continuing for five days thereafter. Complete details can be secured from Walter A. Wilson, D.D.S., 148 West State Street, Trenton.

Colorado State Dental Society, annual meeting, Estes Park, June 20-22.

Ohio State Dental Board, June examination, College of Dentistry, Ohio State University, Columbus, the week beginning June 27. All applications must be in the hands of the Secretary at least ten days before date of examination. For further information write to Morton H. Jones, D.D.S., 1553½ North Fourth Street, Columbus, Ohio.

District of Columbia Dental Society, United States Public Health Service Auditorium, Washington, D. C., sec-

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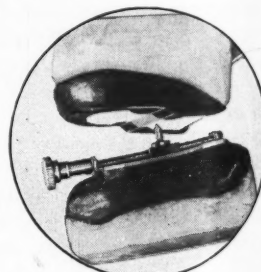
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